UNIVERSIDADE ESTADUAL DE CAMPINAS

Faculdade de Ciências Aplicadas

LUCAS PEREIRA DE MELLO

THE IMPACT OF THE INSTITUTIONAL ENVIRONMENT ON ENTREPRENEURIAL ACTIVITY: AN ANALISYS OF DEVELOPING AND DEVELOPED COUNTRIES

O IMPACTO DO AMBIENTE INSTITUCIONAL NA ATIVIDADE EMPREENDEDORA: UMA ANÁLISE COM PAÍSES EM DESENVOLVIMENTO E DESENVOLVIDOS

LIMEIRA
2021

UNIVERSIDADE ESTADUAL DE CAMPINAS

Faculdade de Ciências Aplicadas

LUCAS PEREIRA DE MELLO

THE IMPACT OF THE INSTITUTIONAL ENVIRONMENT ON ENTREPRENEURIAL ACTIVITY: AN ANALISYS OF DEVELOPING AND DEVELOPED COUNTRIES

O IMPACTO DO AMBIENTE INSTITUCIONAL NA ATIVIDADE EMPREENDEDORA: UMA ANÁLISE COM PAÍSES EM DESENVOLVIMENTO E DESENVOLVIDOS

Dissertação apresentada à Faculdade de Ciências Aplicadas da Universidade Estadual de Campinas como parte dos requisitos exigidos para a obtenção do título de Mestre em Administração.

Orientador: **Prof. Dr. Gustavo Hermínio Salati Marcondes de Moraes**

Coorientador: **Prof. Dr. Bruno Brandão Fischer**

ESTE EXEMPLAR CORRESPONDE À VERSÃO FINAL DA DISSERTAÇÃO DEFENDIDA PELO ALUNO LUCAS PEREIRA DE MELLO, ORIENTADA PELO PROF. DR. GUSTAVO HERMÍNIO SALATI MARCONDES DE MORAES E CO-ORIENTADA PELO PROF. DR. BRUNO BRANDÃO FISCHER.

LIMEIRA
2021

Ficha catalográfica
Universidade Estadual de Campinas
Biblioteca da Faculdade de Ciências Aplicadas
Renata Eleuterio da Silva - CRB 8/9281

M489i

Mello, Lucas Pereira de, 1989-
The impact of the institutional environment on entrepreneurial activity : an analysis of developing and developed countries / Lucas Pereira de Mello. – Limeira, SP : [s.n.], 2021.

Orientador: Gustavo Herminio Salati Marcondes de Moraes.
Coorientador: Bruno Brandão Fischer.
Dissertação (mestrado) – Universidade Estadual de Campinas, Faculdade de Ciências Aplicadas.

1. Empreendedorismo. 2. Econometria. 3. Desenvolvimento econômico. I. Moraes, Gustavo Herminio Salati Marcondes de, 1981-. II. Fischer, Bruno Brandão, 1983-. III. Universidade Estadual de Campinas. Faculdade de Ciências Aplicadas. IV. Título.

Informações para Biblioteca Digital

Título em outro idioma: O impacto do ambiente institucional na atividade empreendedora : uma análise com países em desenvolvimento e desenvolvidos
Palavras-chave em inglês:
Entrepreneurship
Econometrics
Economic development
Área de concentração: Gestão e Sustentabilidade
Titulação: Mestre em Administração
Banca examinadora:
Gustavo Herminio Salati Marcondes de Moraes [Orientador]
Giancarlo Gomes
Priscila Rezende da Costa
Data de defesa: 29-07-2021
Programa de Pós-Graduação: Administração

Identificação e informações acadêmicas do(a) aluno(a)
- ORCID do autor: https://orcid.org/0000-0002-1894-1373
- Currículo Lattes do autor: http://lattes.cnpq.br/0387856096251989

Folha de Aprovação

Autor(a): Lucas Pereira de Mello

Título: The impact of the institutional environment on entrepreneurial activity: an analysis of developing and developed countries.

Natureza: Dissertação para obtenção do título de mestrado.

Área de Concentração: Gestão e sustentabilidade.

Instituição: Faculdade de Ciências Aplicadas – FCA/Unicamp

Data da Defesa: Limeira-SP, 29 de julho de 2021.

BANCA EXAMINADORA:

Prof. Dr. Gustavo Herminio Salati Marcondes de Moraes (Presidente)
Faculdade de Ciências Aplicadas - FCA/Unicamp

Prof. Dr. Giancarlo Gomes (membro externo)
Fundação Universidade Regional de Blumenau

Prof. Dra. Priscila Rezende da Costa (membro externo)
UNINOVE

A Ata da defesa com as respectivas assinaturas dos membros encontra-se no SIGA/Sistema de Fluxo de Dissertação/Tese e na Secretaria do Programa da Unidade.

AGRADECIMENTOS

Chegar ao fim do Mestrado foi uma trajetória tão inacreditável, que para poder escrever meus agradecimentos, vou começar pelo começo, antes mesmo de entrar na FCA. Agradeço aos meus amigos Maurício Bertoldi e Fábio Carlucci por terem me incentivado a entrar no Mestrado, após terem passado por um. Na ocasião, eu ainda não entendia por que deveria fazer um Mestrado, embora sentisse falta de voltar a estudar após oito anos fora da Universidade. Foi o Maurício que se encarregou da argumentação final, dizendo que ao fazer Mestrado e aprender a pesquisar, eu conseguiria pensar de maneira mais sistemática e organizada.

Desde o início, me senti muito bem de voltar à sala de aula, desta vez para aulas e discussões em alto nível. Não posso deixar de mencionar o Prof. Dr. Paulo Hayashi Júnior, com quem tive duas aulas diferentes, todas excepcionais, com discussões de altíssimo nível. Agradeço ao Prof. Dr. Edmundo Inácio Júnior pela conversa inicial, que me fez escolher a FCA como o lugar ideal para fazer o mestrado, também pela experiência de ter participado das aulas de Empreendedorismo e pela orientação que me deu em parte do Mestrado.

Agradeço também ao Prof. Dr. Marco Antonio Figueiredo Milani Filho, quem, na condição de coordenador do programa na maior parte do tempo, sempre me prestou auxílio quando precisei, principalmente no momento mais difícil em que precisei buscar uma nova orientação. Felizmente, acabei encontrando o orientador que precisava na aula de Análise Multivariada de Dados. Trabalhar com o Prof. Dr. Gustavo Hermínio Salati Marcondes de Moraes, na condição de orientador e com o Prof. Dr. Bruno Brandão Fischer, como coorientador, foi uma experiência incrível. Em todo processo, tive todo suporte, sempre com sugestões precisas que fizeram com que tudo fosse rápido, mas com qualidade. A sabedoria, conhecimento e experiência dos meus orientadores fizeram, com certeza, toda a diferença. Agradeço também aos membros da banca, os professores Dr. Giancarlo Gomes e Dra. Priscila Rezende da Costa pelos comentários precisos na qualificação que me ajudaram a aprimorar o trabalho de forma significativa.

Por fim, agradeço aos colegas Henrique Zambon e André Damasceno, com quem compartilhei experiências durante o processo e que se tornaram amigos que ficarão para além do Mestrado. Agradeço à minha irmã, Larissa Ferreira de Mello, sempre brilhante em letras, pela ajuda com a correção do texto em inglês. Por último, mas não menos importante, agradeço à minha mãe, Tânia Lucia Ferreira de Mello, com a certeza de que sem ela, jamais teria chegado tão longe.

“Science is more than a body of knowledge. It’s a way of thinking”

Carl Sagan, Last Interview, 1996

ABSTRACT

The countries' institutions are important drivers of entrepreneurship prevalence and quality. The purpose of this dissertation is to verify what is the impact of the country institutional profile on both the total early-stage entrepreneurial activity (TEA) and productive entrepreneurship. Different indicators representing cognitive, normative, and regulatory institutional dimensions were used. Also, a comparison between institutional effects of developing and developed countries was conducted to verify if they are heterogenous. The methodological approach consisted in panel data regressions being applied on the Global Entrepreneurship Monitor Data, from 2003 to 2019, comprising 112 countries, on an integrative and longitudinal approach, that allowed studying the entrepreneurship institutional determinants and outcomes at the same time. TEA was used as dependent variable for entrepreneurship prevalence and three other variables (high job creation expectation, innovation rate, and motivational index) were used as dependent variables for productive entrepreneurship. Findings support that cognitive institutions impact positively on total entrepreneurship, whereas the impact of normative and regulatory dimensions could not be supported. Results also indicate that a better institutional environment does not maximize productive entrepreneurship. Moreover, institutional effects among developing and developed countries are partially heterogeneous since the impact of informal institutions in developing countries was found to be higher. Thus, the results show that individual aspects impact more on productive entrepreneurship than macroeconomic policies, although some authors have been emphasizing the importance of an education that improves perceived capabilities, self-confidence and risk-taking to achieve more economic growth through productive entrepreneurship. The originality of this research lies in using for the first time, within a single study, a longitudinal and integrative approach to compare institutional effects on two different types of countries and different types of entrepreneurships. By assessing the inefficiency of formal policies to productive entrepreneurship, and the importance of an education that enhances individuals' cognition towards productive entrepreneurship, this study contributes to scientific literature and to policymakers' decisions.

Keywords: Productive entrepreneurship; Institutions; Panel data; Developed economies; Developing economies.

RESUMO

As instituições dos países são importantes impulsionadores da prevalência e qualidade do empreendedorismo. O propósito desta dissertação é verificar qual o impacto do perfil institucional do país, tanto na atividade empreendedora total em estágio inicial (TEA), quanto no empreendedorismo produtivo. Diferentes indicadores representando dimensões institucionais cognitivas, normativas e regulatórias foram usados. Além disso, foi realizada uma comparação entre os efeitos institucionais de países em desenvolvimento e desenvolvidos, para verificar se eles são heterogêneos. A abordagem metodológica consistiu em regressões de dados em painel aplicadas nos dados do *Global Entrepreneurship Monitor*, de 2003 a 2019, abrangendo 112 países, numa abordagem integrativa e longitudinal, que permitiu estudar os determinantes institucionais do empreendedorismo e resultados ao mesmo tempo. A TEA foi usada como variável dependente para a prevalência do empreendedorismo e três outras variáveis (alta expectativa de criação de empregos, taxa de inovação e índice motivacional) foram usadas como variáveis dependentes para o empreendedorismo produtivo. As descobertas evidenciam que as instituições cognitivas impactam positivamente no empreendedorismo total, enquanto o impacto das dimensões normativas e regulatórias não pode ser comprovado. Os resultados também indicam que um melhor ambiente institucional não maximiza o empreendedorismo produtivo. Além disso, os efeitos institucionais entre os países em desenvolvimento e desenvolvidos são parcialmente heterogêneos, visto que o impacto das instituições informais nos países em desenvolvimento foi considerado maior. Assim, os resultados evidenciam que aspectos individuais impactam mais no empreendedorismo produtivo que políticas macroeconômicas, embora alguns autores venham enfatizando a importância de uma educação que aprimore capacidades percebidas, autoconfiança e tomada de risco para se obter mais crescimento econômico através do empreendedorismo produtivo. A originalidade desta pesquisa consiste em usar, pela primeira vez, em um mesmo estudo, uma abordagem longitudinal e integrativa para comparar os efeitos institucionais em dois tipos diferentes de países, e em diferentes tipos de empreendedorismo. Ao avaliar a ineficiência das políticas formais para o empreendedorismo produtivo e a importância de uma educação que aprimore a cognição dos indivíduos em relação ao empreendedorismo produtivo, este estudo contribui para a literatura científica e para as decisões dos formuladores de políticas.

Palavras-chave: Empreendedorismo produtivo; Instituições; Dados em painel; Economias desenvolvidas; Economias em desenvolvimento.

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENTS

1 Introduction

Researchers generally agree that institutions are important to entrepreneurship, and even though some have a wide view of institutions as being anything external to the organization that might influence entrepreneurship, coming up with a long list of institutional aspects that explain different entrepreneurial activities across counties (Dilli *et al*., 2018), it is a consensus that entrepreneurship is constrained and enhanced by the surrounding institutional environment (Elert & Henrekson, 2021). Therefore institutional theorists have been clarifying on the institutional impact, as well as on how institutions work, change and where they lead to (Su, 2020).

Moreover, regarding entrepreneurship, scholars have been focusing on how to increase its prevalence and allocate it productively (Chowdhury *et al*., 2019; Su, 2020), based on Baumol´s (1990) argument that what differentiates entrepreneurship among developed and developing countries is not the supply, but its allocation between productive (e.g., innovative, high-growth oriented), and unproductive/destructive (e.g., litigation, rent seeking, crime) activities. The productive entrepreneurship, which is important for economic growth, is determined by the set of payoffs that society offers to these activities, hence, its predominant institutions (Burns & Fuller, 2020).

Since economic growth is a serious concern to policymakers, and productive entrepreneurship contributes to the matter, it is important to consider the different types of entrepreneurship (Galindo-Martín *et al.*, 2019). Literature has been recognizing as productive types of entrepreneurship: innovative new firms (Arabiyat *et al.*, 2019; Bradley *et al*., 2021), new ventures with high-growth expectations (Bosma *et al*., 2018; Giotopoulos *et al*., 2017), as well as new companies where the founders are motivated by perceived opportunities, rather than by necessity to provide for their living (Amorós, Ciravegna, *et al*., 2019; Fuentelsaz *et al*., 2019; Galindo-Martín *et al*., 2019).

According to Scott (1995), institutions are resilient social structures, composed of three pillars: cultural-cognitive, normative, and regulatory. These three elements are important in restraining organizational behavior and influencing enforcement mechanisms, which will provide stability and meaning to social overall habits. Some researchers refer to regulatory institutions as formal institutions (Chowdhury *et al.*, 2019; Fuentelsaz *et al*., 2019) and to both cognitive and normative institutions as informal institutions (Li *et al*., 2021; Webb *et al.*, 2020). Based on Scott's (1995) pillars, Kostova (1997) introduced the Country Institutional Profile (CIP) for empirical studies comparing institutions among countries and Busenitz *et al*. (2000)

adapted this framework to be used in studies testing institutional impact on entrepreneurship. Since then, the CIP has been used for this purpose by other researchers, such as Stenholm *et al*. (2013), Urbano & Alvarez (2014), Díez-Martín *et al*. (2016), Urban (2016), Bosma *et al*. (2018), Arabiyat *et al*. (2019), and Urban (2019).

1.1 Research justification

This dissertation is a partial requirement for the degree of Master of Business Administration, in the line of research on entrepreneurship and sustainability.

Further clarification on the theme concerning institutional impact of entrepreneurship is important for policymakers (Bradley *et al*., 2021; Chowdhury *et al*., 2019; Galindo-Martín *et al*., 2019; Tomizawa *et al*., 2020) as institutions have a key role on the prevalence (e.g., the extent to which entrepreneurship can be found in given country), and type of entrepreneurship, and thus, it is important to access how institutional quality drives productive entrepreneurship, which, in turn will affect economic growth (Bosma *et al*., 2018).

Moreover, Levie & Autio (2011) claim that some institutions may have more influence than others on the entry decision of strategic entrepreneurs with high-growth expectations. By using the consolidated framework of the Country Institutional Profile (CIP), this study can contribute to assess which institutional dimensions have more influence on entrepreneurial activity across countries, avoiding the common error of using indicators that are not related to institutions (Dilli *et al*., 2018).

Also, by verifying differences in the institutional impact on the entrepreneurship of both developing and developed economies, this study contributes to the literature, as scholars have been mentioning (1) differences in institutional voids (Webb *et al*., 2020), (2) different types of institutional incongruence (Fredström *et al*., 2020; Scott *et al*., 2004), and (3) different motivations to start a business (Amorós, Ciravegna, *et al*., 2019) among these types of countries. Therefore, comparing same models' findings in both type of countries can be insightful to these discussions.

1.2 Problem statement

Based on the discussion that entrepreneurship can be either productive or unproductive (Baumol, 1990; Sobel, 2008) and that differences in the Country Institutional Profile (CIP) of developed and developing countries can affect both quality and quantity of entrepreneurship

among these countries (Chowdhury *et al*., 2019), with differences in the likelihood of finding more ambitious entrepreneurs (Amorós, Poblete, *et al*., 2019), which may be preferring to start a new venture based on perceived opportunities (OPP) rather than by necessity (NEC) (Amorós, Ciravegna, *et al*., 2019; Fuentelsaz *et al*., 2019; Shane, 2009), the research problem is about understanding how differently does the institutional environment affects the prevalence, as well as some qualitative aspects, that indicate productive entrepreneurship, in developed and developing economies.

Kostova (1997) introduced the Country Institutional Profile (CIP) based on Scott´s pillars that could be used to consistently test the role of formal and informal institutions in several research areas. Regarding entrepreneurship some authors have used one or more pillars of the CIP on cross-national studies to test (1) cognitive practices on entrepreneurs' activities (Al Mamari *et al*., 2020), intentions (Liñán *et al.*, 2011) and innovation (Fuentelsaz *et al*., 2018); (2) regulatory aspects on new business activity (De Clercq *et al.*, 2010), on strategic entrepreneur's entry (Levie & Autio, 2011) and allocation of entrepreneurial effort (Bowen & De Clercq, 2008); and (3) normative aspects on entrepreneurs' behavior (Autio *et al.*, 2013) and on entrepreneur's mindset (Rarick & Han, 2015). Some other researchers have focused on the role of the full countries institutional profile on the total early-stage entrepreneurial activity (TEA) (Stenholm *et al.*, 2013; Urbano & Alvarez, 2014) or in the entrepreneurial innovation (Arabiyat *et al.*, 2019; Stenholm *et al.*, 2013; Urban, 2016).

However, there is a gap in the comprehension of how differently the institutional dimensions affect the prevalence of entrepreneurship in developing and developed countries (Chowdhury *et al.*, 2019), as well as its type in some qualitative frames (indicating productive entrepreneurship), such as motivation to start a new venture (opportunity or necessity), innovation, and job creation expectation, on a longitudinal approach over time (Arabiyat *et al*., 2019; Stenholm *et al.*, 2013), and on a integrative approach that allows studying the entrepreneurship determinants and outcomes at the same time, as well as different types of entrepreneurship (Terjesen *et al.*, 2013). Also, this study uses data from the Global Entrepreneurship Monitor (GEM), that a allows a longitudinal approach with the same database for 112 countries, ranging over the period 2003 to 2019. Thus, panel data regressions are applied to answer the research question.

1.3 Research question and objectives

This study aims to answer the following research question:

What is the impact of the Country Institutional Profile on the entrepreneurial activities of developed and developing countries? More specifically, the objective is verifying to what extent do the pillars of the CIP – regulatory, cognitive, and normative – affect both the quality and prevalence of entrepreneurship, assessing the differences between developing and developed countries both in the total early-stage entrepreneurial activity (TEA), and in the following qualitative frames: high job creation expectation; innovation; and motivational index.

The specific objectives of the research are outlined below:

- Objective a: Analyze the relationship between cognitive institutions and entrepreneurial activity.
- Objective b: Analyze the relationship between normative institutions and entrepreneurial activity.
- Objective c: Analyze the relationship between regulatory institutions and entrepreneurial activity.
- Objective d: Compare the impact of institutions associated with entrepreneurship between developing and developed countries.

1.4 Structure of the research

The content of this dissertation is divided into 6 chapters. The first chapter consists of an introduction in which the research justification, research problem, question, gap, and objectives are presented. The second chapter conducts a literature review of the main subjects related to the research problem, which support the research hypothesis. The third chapter shows the method and data chosen to conduct this research. The fourth chapter analyzes and compares the results relating the CIP to the prevalence and quality of entrepreneurship, in developing and developed countries. The fifth chapter conducts some hypothesis validation and discusses the main findings. The last chapter consists of a conclusion, including present research limitations, and recommendations for future research.

Figure 1 presents the main steps of the dissertation to achieve its objectives, starting with the exploration of the literature on the CIP and entrepreneurial activity (Chapter 2), and finishing with the conclusion, limitations, and recommendations for future research (Chapter 6).

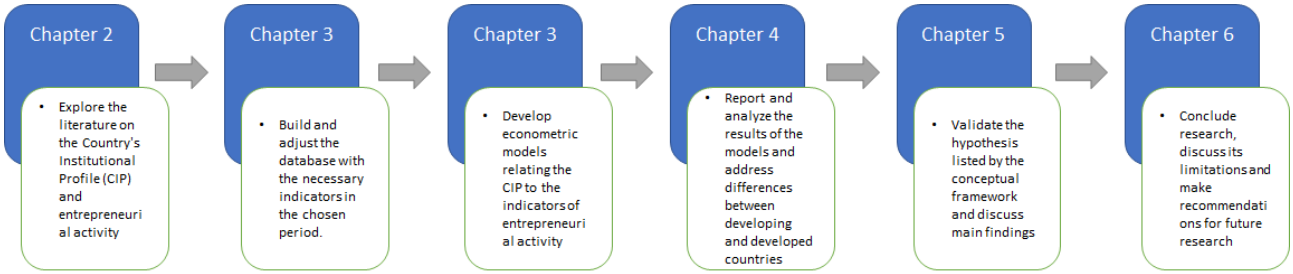

Figure 1. Main steps of the Dissertation.
Source: Own Authorship.

2 Literature Review

This chapter is divided in six sections. The first section consists of a brief presentation of the main New Institutional Economics (NIE) theories and its relation to economic growth. The second section introduces the historical relations between entrepreneurship and economic growth, towards an institutional approach. The third section discusses the impact of the institutional environment on the rate and type of entrepreneurship. The fourth section explores the country institutional profile and presents the institutional framework that this study uses. The fifth section presents the quantitative and qualitative entrepreneurial frames applied on this research. The last section presents a conceptual model built on the literature explored by this study, and the research hypothesis, which are also supported by the study literature.

2.1 New institutional economics and growth

North (1991) defines institutions as humanly created constraints that determinate political, social, and economic interaction within society and gathers both formal and informal rules. On a historical analysis from small-scales villages to modern societies, he argues that institutions provide support for countries economic development and explains mainly why countries in Western Europe managed to increase productivity, reduce costs of transactions, and engage in long distance trade, whereas some old societies still trade by informal rules of the Suq. North (1990, p. 110) emphasizes that "third World countries are poor because the institutional constraints define a set of payoffs to political/economic activity that do not encourage productive activity".

Moreover, institutions affect country growth because they are crucial to expenditures on transactions costs - lack of property rights cause firms to operate illegally or in small-scales - and are also crucial to transformation costs, as unenforceable contracts and cheap technologies cause companies to operate less efficiently (Aron, 2000). In this regard, Henisz (2000) claim that alongside with reducing transaction costs, institutions play an important role in formal economic modelling, reducing uncertainty. However, the author reminds that uncredible reforms or arbitrary policies are hazardous to economic growth since it chases away private investments.

Although institutions are considered important to explain differences between developed and emerging economies, Przeworski (2004) recognizes that institutions are endogenous and non-autonomous, as conditions shape institutions, which will reinforce the

casual effects of those conditions. In this case, institutions, and development form either a virtuous or a vicious cycle, which can be associated to the path dependence idea (David, 1994), where informal rules that can evolve are also important to create better institutional environments.

Williamson (2000) proposes a four-level framework, starting with informal institutions in the first level, which is based on norms, customs, and traditions. He claims that informal institutions are hard to calculate and appear spontaneously. In the second level, comes the formal institutions, which are the formal rules of the game (e.g., securing property rights). In his model, informal and formal institutions influence each other. The author also affirms that the third level (governance) and the fourth level (resource allocation) are other important determinants to create a conducive institutional environment.

Scott (1995) proposes a division of institutions into three pillars: regulatory, cultural-cognitive, and normative, with regulatory being the formal ones and the remaining two being the informal ones. He also agrees to North's approach on handling institutions, when "examining the origins of cultural, political and legal frameworks and their effects on economic forms and processes" (Scott, 1995, p.33). Therefore, to North's and Scott's views, transactions costs would be a dependent variable subject to the effects of the institutional framework. In this study, the three institutional pillars proposed by Scott (1995) result in three different hypotheses, to verify their impact on the different types of entrepreneurships.

The theoretical baseline for the hypotheses comes from the fact that institutions and policies influence entrepreneurship, as they influence transaction costs of entrepreneurs searching for combining, and adapting different resources to obtain profit (Bjørnskov & Foss, 2016). This makes institutional importance even higher, as alongside with quality in the institutional environment, new ventures creation has been increasingly important for the economic development (Audretsch & Thurik, 2000; Carree *et al*., 2002), with productive and ambitious entrepreneurship being even more important, which can be found when new firms are innovative, export-oriented or have high growth expectations (Giotopoulos *et al.*, 2017).

Next section discusses the historical importance of entrepreneurship in different stages of the country's development, which implies an institutional approach, especially for the productive types of entrepreneurships.

2.2 Entrepreneurship and growth: towards an institutional approach

Carree *et al.* (2002) describes that the 20th century corporate history is marked by a period of accumulation, where large companies, especially from the 60s onwards, engaged in large scale and scope, enhance a corporate merger wave. However, from the 70s onwards, the share of small firms in manufacturing rose in developed countries and technological-innovative start-ups became vital to the development of new industries. Audretsch & Thurik (2000) examine how the period post-Cold war initiated a new economic era, in which globalization introduced new participants into global economy, with Southeast Asia conquering share over East and Central Europe. Changes caused by the information revolution made it difficult to keep jobs at high-cost places, taking a toll at traditional metalwork, automotive and textile industries. Hence, entrepreneurship gained traction on this new knowledge-based Economy (Audretsch & Thurik, 2000).

Brouwer (2002) argues that entrepreneurship has escaped from neoclassical theorists due to its relation to novelty and change. On the other hand, it is central to Schumpeter's Mark I theory as entrepreneurial innovation is seen by this author as the engine to economic development, contrary to Weber's view of the puritanism being crucial to the development of the West. Schumpeter (1943) claims that innovation is the heart of the capitalism, as he saw the importance of monopolies to sustain earnings for innovative ventures and relativized the harms that monopolies could cause to competition, because they were as well threatened by innovation, on a continuum process of creative destruction. Despite his pessimism to capitalism in dispute with socialism, his latest view on Economy, claiming that entrepreneurial innovation was crucial to development in some cycles, is corroborated by economic historians, who saw the last half of 20th century corporate history as a period where merger and acquisitions, and large corporations share on growth gave way to new-innovative ventures increasing importance on economic development (Audretsch & Thurik, 2000; Carree *et al.*, 2002).

Audretsch & Keilbach (2007) states that the neoclassical model of production needs to introduce a new factor - the entrepreneurship capital - as it contributes positively to economic growth through (1) knowledge spillovers, (2) increasing competition generated by new ventures, and (3) firm diversity. The authors found a positive and significant coefficient indicating that entrepreneurship is a key factor for explaining output variations in Germany.

Acs *et al.* (2008) built on Porter's (1990) division of economies in three stages (factor-driven, efficiency-driven, and innovation-driven) defends a more institutional approach to assess the relationship between entrepreneurship and the economic stage, that could explain more systematically what economic historians had described. Factor-driven economies

compete on cost efficiencies for low value-added products and commodities and are marked by a high rate of self-employment, on small manufacturing and services firms. Efficiency-driven economies are those that start exploiting scale economies, with large production concentrated on industries. This type of economy is marked by a reduction on self-employment and the relationship between entrepreneurship and economic growth tend to be negative. Finally, on innovation-driven economies, entrepreneurial activity increases, as share of manufacturing firms on economy diminishes and economy-wide average firm size decline. Regarding institutions, Acs *et al.* (2017), under the concept of entrepreneurial ecosystems, managed to capture that the interactions between institutions and private initiatives may be crucial to economic growth in factor and efficiency-driven economies, but, intriguingly, not to innovation-driven economies, where the share of new ventures is expected to be higher.

With the increasing importance of entrepreneurship for countries in different economic stages, comes the idea that supporting entrepreneurship could be a key public policy, which Shane (2009) disagrees. The author argues that, when analyzing the Global Entrepreneurship Monitor (GEM) data for 34 countries from 1998 to 2003, the average start-up settled required only $11.400 in capital, and, therefore cannot be compared to the foundation of companies such as Google and SAP, that required a lot more. So, to get more economic growth from new ventures would demand that they were more efficient than the existing ones, which is not true.

As it is clear that economic development and increasing wages make opportunity costs higher for and entrepreneur to abandon his job and start a new venture (Carree *et al.*, 2002), especially on efficiency-driven stage (Acs *et al.*, 2008), entrepreneurs can be divided into opportunity-driven, starting a business on the pursuit of growth, profit, personal development and innovation; or necessity-driven, when they start a business as a way to compensate for the lack of other sources of occupation (Amorós, Ciravegna, *et al.*, 2019; Shane, 2009). Ács & Varga (2005), on a 11 countries study, found that opportunity entrepreneurship is significantly important to economic growth, whereas necessity entrepreneurship has no effect. On a study using GEM data from individuals of 51 countries from 2005-2013, Amorós, Ciravegna, *et al.* (2019) found that state fragility increases necessity-driven entrepreneurship and hinders opportunity-driven. In another study with GEM data containing 14 Latin American countries from 2006-2015, (Amorós, Poblete, *et al.*, 2019) found that international orientation and higher education levels result in a higher likelihood of an individual engaging in innovative and ambitious entrepreneurship, which can be seen as a productive entrepreneurship.

The importance of assessing contextual embeddedness of entrepreneurship increases when considering that traditional literature "fails to account for the institutions that delineate appropriate resources, means and categories of actors for engaging in entrepreneurship" (Sine & David, 2010, p.2). The author argues that entrepreneurship literature has focused most on personal skills and attributes of entrepreneurs, taking for granted that entrepreneurs and opportunities are always available. Baumol (1990) agrees with the statement that entrepreneurs are always available, but brings on the entrepreneurial productivity discussion, that is central to the institutional perspective. According to this author, some entrepreneurs are engaged in productive activities with positive sum, whereas other are involved in unproductive activities, which may involve lobby and corruption, resulting in negative sum to economy and society (zero sum from their wealthy transfer activities plus costs of bureaucracy, litigation, and lobbying).

Baumol (1990) exemplifies as menaces to productive entrepreneurship: (1) rent seeking, by activities such as litigation and takeovers, as well as tax evasion and (2) high-tax societies, which makes it harder to get richer by productive attempts in ordinary production system. The author claims that change in institutional environment would be key to increase productive entrepreneurship, as it is easier to change the rules of the games and payoff structures than changing goals of entrepreneurs.

Sobel (2008) tests Baumol´s theory by assessing the economy's net entrepreneurial productivity (NEP) which is calculated by total productive entrepreneurship minus unproductive entrepreneurship. The author then conducts some linear regressions, with one of them showing a positive relation between institutional quality score and NEP score of the 50 US states. The author includes some reforms recommendation to increase reward to productive entrepreneurship in relation to the unproductive one, which includes mostly tax reduction and simplification, privatization, liability limits to lawsuits, reducing state ownership to productive resources, among others.

Baumol's view adds to Gartner (1985), as Gartner sees many differences between entrepreneurs, which is a result of venture creations being held in 4 multidimensional perspectives: (1) characteristics of the entrepreneur (2) the organization type that is settled (3) the surrounding environment that is influencing this new organization and (4) the process of forming this new venture. The idea that these 4 dimensions will contribute to a different type of new venture is central to the debate that institutions have an impact on the quality, prevalence, and type of new companies.

Even though the entrepreneurial process should be seen as multidimensional process, most research focused on a single dimension approach, with some using a context-centric approach, such as Aldrich & Fiol (1994) “red tape” concept - in which entrepreneurs need to conform to the institutional environment to secure their legitimacy and succeed - and it´s pointed by Su *et al*. (2017) as a seminal work connecting institutions and entrepreneurship. Others are focused on an actor-centric approach, that examines the entrepreneur’s cognition, intentions, and network, but few studies view entrepreneurial innovation in a process where actors and contexts are co-created, resulting in a multilevel approach (Garud *et al*., 2014). In this extent, Elert & Henrekson (2021) claim that the relation that indicates institutions as determinants of productive entrepreneurship is only part of the story, because the causality is bidirectional, as entrepreneurship is also a key factor to institutional change.

Su *et al*. (2017) reviewed 194 entrepreneurship articles from 11 journals that uses the institutional perspective (EIn) from 1992-2014 and concluded that from 1992 to 2000 there were only a few studies on the theme, mostly conceptual. Then, followed an exploration phase from 2000-2007 interested in uncovering how entrepreneurs used strategies to shape and create institutions. From 2008 onwards, EIn empirical articles gained strong momentum with focus on the constraining perspectives of institutions that limit new ventures rates and define their types. More recent studies focused on building econometric models, using secondary data, especially from the GEM, to access how cross-country differences in the institutional profile affects the rate, type, and productivity of new firms (Arabiyat *et al*., 2019; Bosma *et al*., 2018; Stenholm *et al*., 2013; Urban, 2016). The econometric model proposed by the present study seeks to evaluate cross country differences, considering the restraining impact of formal and informal institutions on entrepreneurship. Therefore, this study focuses on a comparison of overall institutional dimensions impact on entrepreneurial prevalence and type between countries, and not within countries (Burns & Fuller, 2020).

Next section explores empirical studies that evaluate the impact of the three institutional dimensions proposed by Scott (1995) on the prevalence and types of entrepreneurships (such as innovation). Most of them use the GEM Data and, therefore, have methodological similarities to the present study, offering important insights for its hypotheses.

2.3 Institutions and entrepreneurship: prevalence and quality

Stenholm *et al.* (2013) conducted a multidimensional research to evaluate how the institutional profile influences the rate and type of entrepreneurship. Using GEM and other

indices data from 63 countries on a structural equation model (SEM), the authors found that the regulatory institutional arrangements - which facilitates new businesses formation - influence the rate of entrepreneurial activity in a country, whereas normative, cognitive, and conducive dimensions have no impact on the rate. Regarding the type of entrepreneurship, the conducive dimension i.e., technology and venture capital availability, have a positive impact on high quality entrepreneurship, while the normative dimension have a negative impact (suggesting that even though entrepreneurship is a socially acceptable choice, pursuing high growth aspirations and innovation is not). Stenholm *et al.* (2013) also speculate that the non-found association between the cognitive dimension and the type of entrepreneurship may be due to the data, that did not account for differences between opportunity and necessity entrepreneurship.

Urbano & Alvarez (2014) used binominal logit regression on the 2008 GEM data to examine the influence of institutional dimensions (regulatory, cognitive, and normative) on the likelihood of an individual becoming an entrepreneur and found a positive influence, with the regulatory and normative dimensions encouraging people to become entrepreneurs, and with normative dimension being moderated by the cultural-cognitive dimension (strong cultural-cognitive environment is needed to create new firms).

Urban (2016) studied the influence of the institutional environment on the innovation performance of information and communications technology (ICT) companies in south Africa. Results from the correlations showed small, but significant, influence from the regulatory and normative perceptions on venture innovation. The author argues that non-significant impact from the cognitive dimension may be explained by low levels of self-efficacy perceptions, lack of skills and business knowledge in South Africa.

Díez-Martín *et al*. (2016) applied partial least squares (PLS) methodology on GCI and GEM data of 37 countries from 2009 to 2013 to verify the influence of the country's institutional legitimacy (framework) on both entrepreneurial activity and access to finance. Findings suggest that innovation-driven countries present larger entrepreneurial activity, when anchored by a high-level on entrepreneurial legitimacy (institutions supporting entrepreneurship), with the cognitive dimension exerting stronger influence than normative and regulatory ones. The institutional framework model also indicates a positive relationship between the country's legitimacy to entrepreneurship and access to financing, mainly influenced by the regulatory dimension.

Bosma *et al*. 2018) conducted a three-stage least squares (3SLS) for simultaneously estimating the effect of institutional quality, built on Scott (1995), on productive entrepreneurial activity and on GDP per capita growth, using data of 25 European countries from 2003 to 2014. Regarding regulatory dimension, they found that regulation for credit labor and business is positively related to entrepreneurial activity, while government size is negatively related. Regarding the cultural environment, encouraging a culture of entrepreneurship, that reinforces awareness and perceived capabilities, is positive to entrepreneurial activity. Calculating by the predictive results of the model, Bosma *et al.* (2018) claim that a 10% increase in perceived skills could result in 0.5% GDP per capita growth and a 10% improve in the regulation for credit labor and business could result in additional 1.1% growth. The authors recognize that improving institutional scores is not trivial and requires an institutional improvement strategy.

Arabiyat *et al*. (2019) used SEM methodology on the 2016 GEM data from 65 countries to examine the CIP (normative, regulatory, cognitive, and conducive aspects) influence on innovative entrepreneurship across countries. Results showed a significant and positive impact of the regulatory and conducive dimensions on the individual's likelihood to pursue an innovative enterprise. From the aspect of normative dimension, similarly to Stenholm *et al*. (2013), Arabiyat *et al*. (2019) found a negative impact to innovation rates, but they claim that when modeling the effects of normative dimension on entrepreneurial innovation separately, the relationship becomes positive and significant.

Urban (2019) conducted a survey on financial service sector companies in South Africa to verify the impact of regulatory, normative, and cognitive institutions on the entrepreneurial orientation (EO) level in terms of proactiveness, risk-taking and innovativeness. The author found that the three institutional dimensions are significant in explaining EO dimensions variance, with the cognitive dimension being the most important determinant.

Table 1 summarizes data from the studies presented in this section, including their dependent variables, models, and main findings.

Table 1
Main empirical cross-national studies evaluating institutional impact on type and quantity of entrepreneurship

Authors	**Dependent variables**	**Data Source (dependent variables)**	**Model**	**Main findings**
Stenholm *et al*. (2013)	Entry density and entrepreneurial aspirations	WBGES and GEDI	Structural equation modeling (SEM)	Regulatory institutions influence rate and conducive institutions

				influence quality of entrepreneurship
Urbano & Alvarez (2014)	Total early-stage entrepreneurial activity (TEA)	GEM APS	Binomial logit model	Regulatory and normative dimensions encourage people to become entrepreneurs
Urban (2016)	ICT Industry in South Africa	Author research	Principal components analysis (PCA) and correlations	Small influence from the regulatory and normative perceptions on venture innovation
Díez-Martín *et al*. (2016)	TEA and financial access	GCI and GEM	Partial least squares (PLS)	Innovation-driven (with high institutional legitimacy) countries present larger entrepreneurial activity
Bosma *et al*. (2018)	TEA; TEA motivation index; TEA high-growth expectation; entrepreneurial employee activity (EEA); and per capita GDP	GEM APS and Penn World Table (PWT)	Three-stage least squares (3SLS)	Regulation for credit labor, regulation for business, and culture of entrepreneurship are positively related to entrepreneurial activity
Arabiyat *et al*. (2019)	entrepreneurial innovation	GEM APS	Structural equation modeling (SEM)	positive impact of the regulatory and conducive dimensions on the individual's likelihood to pursue an innovative enterprise
Urban (2019)	Entrepreneurial orientation	Author research	Exploratory factor analysis (EFA); correlational and regression analyses	All the three institutional dimensions are determinants of EO, especially the cognitive one

Source: Own Authorship.

Next section discusses differences in the institutional profiles, as well as the quality of entrepreneurship found when comparing developing and developed countries. This comparison is also insightful to the hypotheses of this study, as in a sub-level, it is hypothesized that institutional effects of every institutional pillar are heterogeneous among developed and developing countries.

2.3.1 Institutions and entrepreneurship: developing and developed countries

Institutional comparisons between developing and developed economies are viable because the country institutional profile built by Busenitz *et al*. (2000); Kostova (1997) and Scott (1995) is also appropriate in the context of emerging economies (Manolova *et al.*, 2008).

Chowdhury *et al*. (2019) evaluated how formal and informal institutions account for variations in the quality and quantity of entrepreneurship across developing and developed countries, using data of 70 countries from 2005-2015 (matching data from 6 different sources, including the GEM). They tested some hypothesis and found that: (1) venture capital (VC) availability compared to debt financing increases quality of entrepreneurship in both developed and developing economies, but not the quantity; (2) entrepreneurial skills and perceived opportunities increase entrepreneurship quantity; (3) improvements in fiscal, labor and bankruptcy regulation is beneficial to the quantity of entrepreneurship in developing economies, plus low corporate tax being beneficial to the quantity in both types of countries (with higher resilience on developing economies to tax increases as many businesses tend to operate on informality); (4) corruption increases the quantity of entrepreneurship in developing countries, but not the quality, whereas in developed countries it works as an extra tax, taking a toll on productive entrepreneurship; (5) state programs and government size contributes more to the quantity of entrepreneurship in developing countries compared to the developed ones, while the quality is positively affected by government programs in both types of countries.

Another important discussion about differences in entrepreneurship between developing and developed economies concerns motivation and opportunity costs. In developed economies it is harder to engage in non-innovative entrepreneurial activities due to higher transaction costs and sophistication of these markets (Amorós, Ciravegna, *et al*., 2019). Naudé (2011) claim that entrepreneurship may not be a binding constraint in the development of the poorest countries, as necessity-driven entrepreneurship is higher in these economies. Rather, institutions that shape the entrepreneurial activity may be more crucial, especially when they enhance opportunity-driven entrepreneurship, which provide support for economic growth and development (Amorós, Ciravegna, *et al*., 2019; Naudé, 2011).

Despite the importance of improving the institutional profile to create a conducive environment to entrepreneurship quality in developing countries, arriving at a well-fitted set of institutions may take longer, as informal institutions are more difficult to change (North, 1990). In this case, a formal institutional policy may be hindering cultural drivers of opportunity entrepreneurship (Cullen *et al*., 2014), as in countries where the informal size of the economy

is large, state measures to improve governance may be counterproductive due to institutional incongruence (Fredström *et al*., 2020). Moreover, formal or informal institutional voids are more likely to be found in developing countries, resulting in a lower rate of productive entrepreneurship. When analyzing, for instance, the rate of entrepreneurship in transition economies, i.e., former communist countries in transition to capitalism, Estrin & Mickiewicz (2011) claim that it is lower than in a group of developed and developing countries, because the pace of change in informal institutions towards entrepreneurship is slower than the change in formal ones. In a study conducted in three Eastern Europe emerging countries (Latvia, Bulgaria, and Hungary), Manolova *et al*. (2008) argue that the overall institutional profile among them is not favorable to entrepreneurship.

In China, for instance, Su (2020) affirms that the institutional transition was possible because it took a long time, starting with struggling efforts from President Deng Xiaoping to open 14 coastal cities for foreign investment, in the late 70s. Due to the informal institutional voids, caused by the resilient socialist mindset, it took almost 20 years for the population to start seeing entrepreneurship as a good career choice. Since initially there were few entrepreneurs, who were mostly allocated into unproductive activities, it took even more time for the government to develop institutions that enhanced market transactions. More recently, the political influence of entrepreneurs resulted in new informal institutions that compensated for the lack of formal ones, especially in regards to venture internationalization (Li *et al.*, 2021).

In Latin America region, where most countries are developing economies, Aparicio *et al*. (2016) found that informal institutions have more influence on opportunity entrepreneurship, which, in turn, brings more economic growth. The authors suggest policies to promote opportunity entrepreneurship through informal factors, like self-confidence in individual's skills to create new ventures stimulated by OPP.

Even the discussion of whether entrepreneurship leads to economic growth needs to consider the country's development level. On a study that applied mixture model on 83 countries data from the GEM (2004-2012), Boudreaux (2019) claim that entrepreneurship contributes to the economic growth of developed countries, but not to the developing, mainly due to the motivation to start a business in these two groups of countries (48.9 percent of countries presented a positive association between OPP and economic growth, while 51.1 percent of countries presented a negative association between NEC and growth).

Curiously, although entrepreneurship is seen as increasingly important as country develops, Erken *et al.* (2016) affirm that it is not considered in models that predict total factor

productivity in developed countries. By analyzing 20 OECD countries with data for the period 1969–2010, they prove that entrepreneurship systematically contributes to productivity in developed economies.

Next section introduces the country institutional profile - composed of three dimensions (cognitive, normative, and regulatory) - and conceptualizes each of these dimensions, also presenting some studies that analyzed one of the three dimensions separately.

2.4 Institutional Framework

According to Scott *et al.* (2004) the three institutional pillars - cultural-cognitive, normative, and regulatory - may not be influencing in the same way, sometimes with one undermining other. Also, some theorists have been recognizing bottom-up schemes of influence, discussing Institutional "process" rather than Institutional "effects". This might explain why some studies found moderate relations between some of the variables (Urbano & Alvarez, 2014) or even differences in results when evaluating a dimension separately or combined on the CIP (Arabiyat *et al*., 2019). This justifies working with all the three dimensions from the CIP, following Busenitz *et al.* (2000); Kostova (1997); Scott (1995).

Kostova (1997) conducted an exploratory factor analysis (EFA) to uncover the institutional dimensions affecting multinational firms in relation to quality management across countries. Results show that developed economies tend to present better institutional scores in relation to emerging economies. Kostova (1997) found three institutional constructs –cognitive, normative, and regulatory – which corroborated with Scott (1995), who suggested the division of institutional framework into these three constructs for research purposes. The author suggests that these constructs are consistent and can be used for research in other areas concerning the role of institutions.

Busenitz *et al*. (2000) used SEM to conduct a confirmatory factor analysis (CFA) in the CIP measure for entrepreneurship, which was based on Kostova (1997). Using collected data from 6 different countries, the authors managed to validate a measure of CIP for entrepreneurship composed of cognitive, normative, and regulatory dimensions.

In the present study, all variables selected to indicate one of the three dimensions are independent variables. They are variables that indicate one of these dimensions associated with entrepreneurship, with every dimension resulting in one different hypothesis. Table 2 summarizes the typology of each dimension.

Table 2
Entrepreneurial dimensions typology

Typology	Definition	Perceived elements
Regulatory entrepreneurial dimension	a generalized perception or assumption that the actions of a country to regulate entrepreneurial activity are desirable, proper, or appropriate.	Rules, policies, norms, and laws
Normative entrepreneurial dimension	a generalized perception or assumption that the actions of a country to promote an entrepreneurial culture are desirable, proper, or appropriate	Social references or national culture: social norms, values, and beliefs
Cognitive entrepreneurial dimension	a generalized perception or assumption that the actions of a country to promote entrepreneurial capabilities are desirable, proper, or appropriate	Knowledge, skills, capabilities

Source: adapted from Díez-Martín *et al.* (2016).

The following three sections presents and explains each dimension separately, as well as the set of variables chosen from the GEM to indicate each dimension.

2.4.1 Cognitive dimension

This dimension includes logics, ideologies and cognitive frames that are profoundly embedded in each society (Sine & David, 2010). De Clercq *et al.* (2010) relates this dimension with the ability of a given country population to start and manage a new business. Busenitz *et al*. (2000) defines the cognitive dimension as the knowledge and skills shared by the populations of a country that became institutionalized and enables them to start new businesses. Scott (1995) based his cognitive pillar heavily on DiMaggio & Powell (1991) and, alongside with the normative pillar, saw it as an informal institution built of rules and meanings, over time, to constrain actions and beliefs. Hafer & Jones (2014) found a significant and positive relationship between a country's cognitive skills and its rate of entrepreneurship.

Al Mamari *et al*. (2020) examine the impact of self-perceived cognitive factors on the development of entrepreneurship activity in Oman, using 2019 GEM data, and found that perceived business opportunities, necessary skills and creativity have a positive impact – while fear of failure have a negative impact – on starting new firms on the country.

Liñán *et al.* (2011) applied logit regressions on the 2004 GEM APS Data to verify the impact of entrepreneur's individual perceptions on entrepreneurial intentions. The authors

found that three kinds of perceptions (individual perceptions, perceptions about entrepreneurial opportunities, and socio-cultural perceptions) are relevant variables to explain entrepreneurial intentions across countries.

Fuentelsaz *et al*. (2018) analyzed the impact of individual factors on venture innovations and found that risk-tolerance, entrepreneurial alertness (measured by perceived opportunities to start a business in the next six months), previous entrepreneurial experience, and education have a positive impact on the innovativeness of new ventures. The authors also found that an institutional context with higher economic freedom reinforces the impact of these individual cognitive factors on the dependent variable.

Our 4 cultural-cognitive indicators related with entrepreneurship were selected from the GEM Adult Population Survey (APS) data and were already used as indicators of this dimension in previous studies: (1) perceived capabilities (Al Mamari *et al*., 2020; Chowdhury *et al*., 2019; De Clercq *et al*., 2010; Khursheed *et al*., 2019; Urban, 2016); (2) perceived opportunities (Al Mamari *et al*., 2020; Chowdhury *et al*., 2019; Stenholm *et al*., 2013); (3) fear of failure (Al Mamari *et al*., 2020; Arabiyat *et al*., 2019; Urbano & Alvarez, 2014); and (4) entrepreneurial intentions rate (Arabiyat *et al*., 2019; Liñán *et al*., 2011).

2.4.2 Normative dimension

Even though cognitive and normative dimensions both derive from culture, the latter is different in the extent that it represents informal actions that individuals and organizations should comply with, such as standards of behavior and commercial conventions (Bruton *et al*., 2010). Many researchers use Hofstede´s (1980) dimensions of culture as normative environment (Busenitz *et al*., 2000). Hofstede (1980) differentiates the cultural orientation of a country in four perspectives: power distance (PDI), individualism–collectivism (IND), uncertainty avoidance (UA), and masculinity–femininity (MAS). However, Busenitz *et al*. (2000) reinforces the importance to develop a specific measure to the domain of entrepreneurship, which accounts for "the degree to which a country's residents admire entrepreneurial activity, value creation, and innovative thinking" (Busenitz *et al*., 2000, p. 995).

Autio *et al*. (2013) evaluates how some cultural measures - which functions as normative institutions - impact entrepreneurship entry and growth aspirations. The authors used data from the GEM (42 countries, 2005-2008), the Global Leadership and Organizational Behavior Effectiveness (GLOBE), the International Monetary Fund (IMF) and EuroStat, on a multilevel design. Results showed that institutional collectivism hinders entrepreneurial entry

but enhances entrepreneurial high-growth expectations. Uncertainty avoidance practices were negatively related to entrepreneurial entry, whereas performance orientation practices were positively associated with the entry.

Rarick & Han (2015) built on Hofstede (1980) typology and using the Global Entrepreneurship and Development Index (GEDI) data from 57 countries, found that countries with higher levels of individualism and lower levels of power-distance present more success in creating high-impact ventures. Additionally, Pinillos & Reyes (2009) used GEM Data from 54 countries to evaluate the impact of the individualist-collectivist orientation on entrepreneurship rates. The authors claim that their results show that individualism cannot be directly associated to higher rates of entrepreneurship, as it is mediated by the country's level of development. In developing countries, individualism is negatively related to entrepreneurship, whereas in developed countries it is positively related.

2 of our 3 normative indicators related with entrepreneurship were selected from the GEM Adult Population Survey (APS) data and 1 indicator was selected from the GEM National Expert Survey (NES) data. They were already used as indicators of this dimension, or a similar framework, in previous studies: (1) entrepreneurship as a good career choice and (Arabiyat *et al*., 2019; Díez-Martín *et al*., 2016); (2) high status to successful entrepreneurs (Díez-Martín *et al*., 2016; Stenholm *et al*., 2013); and (3) cultural and social norms (Boudreaux, 2019).

2.4.3 Regulatory dimension

According to Busenitz *et al*. (2000) the regulatory dimension of the CIP accounts for the laws, regulations and governmental policies that provides support for business in each country and eases the process for an individual to start a business. Scott (1995) argues that this dimension is related to rule-setting, monitoring and sanctioning activities carried out by the State. Some authors refer to the regulatory dimension as formal institutions (Chowdhury *et al*., 2019; Fuentelsaz *et al*., 2019).

De Clercq *et al*. (2010) used GEM Data from 14 countries to verify the moderating impact of the institutional profile of a country between the associational network activities and new business creation in emerging economies. Regarding the regulatory burden, the study found evidence that this burden increases the positive relation between associational network and new businesses. The same was found with the normative burden.

Bowen & De Clercq (2008) applied logit regressions on the 2002-2004 GEM and WEF data to assess the impact of the (1) availability of financial capital targeted to entrepreneurship

(2) educational capital targeted to entrepreneurship (3) regulatory framework (4) and level of corruption on the proportion of the entrepreneurial effort that pursue high growth aspirations. The finding that indicated no significant relation between the regulatory complexity and the allocation of entrepreneurial efforts into productive activities is aligned with studies conducted later on, which found that regulatory framework is more associated with the prevalence rather than the quality of entrepreneurship (Chowdhury *et al*., 2019; Stenholm *et al*., 2013). Regarding the assessed negative relation between level of corruption and high-growth entrepreneurship, the authors see it as supporting evidence for Baumol's (1990) thesis that unproductive entrepreneurship prevail on countries with high corruption levels.

Levie & Autio (2011) used panel data regression on the GEM and the World Bank EDB Index data, from 53 countries between 2004-2008 verify the impact of (1) lighter regulatory burden (2) rule of law and (3) interactions between rule of law and regulatory burden on the TEA and on strategic entrepreneurial entry. They found that regulations reduce the entry of high-ambitious entrepreneurs in countries with a strong rule of law. As for non-strategic entry rates, the effects of regulations were found to be non-significant. Levie & Autio (2011) explain that their results were different from Bowen & De Clercq's (2008) because "they tested for institutional effects on entry with larger panel datasets on the dependent variable and objective, comparative measures of regulation as independent variables" (Levie & Autio, 2011, p. 1409).

Aidis *et al*. (2012) applied regression models on GEM and Heritage Foundation data for 47 countries (1998-2005) and found a significant negative relation between state size and entrepreneurship; and a less robust positive relation between freedom from corruption and entrepreneurial entry. Market freedom presented only a slight positive relation to new business creation (especially when the richest countries are not considered).

Our 5 regulatory indicators related with entrepreneurship were selected from the GEM National Expert Survey (NES) data and were already used as indicators of this dimension, or of a similar framework, in previous studies: (1) governmental support and policies (Amorós, Poblete, *et al*., 2019); (2) taxes and bureaucracy (Arabiyat *et al*., 2019; Bowen & De Clercq, 2008); (3) governmental programs (Chowdhury *et al*., 2019); (4) commercial and professional infrastructure (Boudreaux, 2019); and (5) internal market openness (Boudreaux, 2019).

Next section presents and conceptualizes our four dependent variables. While the first one is used to verify our hypothesis on the first level (prevalence of entrepreneurship), the remaining three are used to verify the hypothesis on the second level (entrepreneurship quality).

2.5 Quantitative and qualitative entrepreneurial frames

In order to evaluate the impact of the country institutional profile on entrepreneurship, we build some econometric models, with different dependent variables. One of them – the total early-stage entrepreneurial activity (TEA) - is quantitative and the other 3 (high job expectation, innovation, and motivational index) are used as qualitative frames that indicate productive entrepreneurship.

The total early-stage entrepreneurial activity (TEA) is an indicator calculated by the GEM Adult Population Survey, which is conducted by the GEM National Teams, that interview a representative national sample of a minimum of 2000 people from each country, every year (Reynolds *et al.*, 2005). The indicator is the percentage of the adult population (18 to 64 years old) that is either involved in starting a new business or is the owner/manager of a business that is less than 42 months old (Reynolds *et al.*, 2005).

This indicator that measures the quantity, rate or prevalence of entrepreneurship in a given country has been used by other researchers, such as Bosma *et al*. (2018), Chowdhury *et al*. (2019), and Stenholm *et al.* (2013). In the present study it is used as one of the dependent variables for our models, that testes the impact of each institutional dimension on total entrepreneurship, which is the basis for the hypothesis on the first level.

2.5.1 High job expectation

This indicator definition is the percentage of those involved in TEA who expect to create 6 or more jobs in 5 years (GEM, 2021). In some studies, this indicator has been used as a proxy for high-growth aspirations (Autio *et al*., 2013; Bosma *et al*., 2018), which is seen as high-quality entrepreneurship (Giotopoulos *et al*., 2017). In the present study, it was selected as one of the variables that indicate productive entrepreneurship.

Åstebro & Tåg (2015) conducted a study using a dataset of 24 million observations in 230 thousand entrepreneurial entries to analyze the gross (including the founders), net (excluding the founders), and new (people that were previously unemployed) jobs created by entrepreneurs with 2 to 6 years ahead of their start-up. They found that mostly entrepreneurs arrive from other jobs and do not create any further job other than for him/herself, and, therefore, these average entrepreneurs cannot be associated to quality entrepreneurship.

Adenutsi (2009), on an economic perspective, defends the importance of entrepreneurship to job creation, income generation and poverty reduction on low-income

countries, where policy measures that improve institutional quality to promote entrepreneurship are necessary. However, creating and measuring policies for high-growth firms may not be easy, as results take years to materialize and not all applicants complete programs, in countries where it is available (Autio & Rannikko, 2016). Moreover, only a small portion of startups grow quickly and contributes to job creation but, still, little is known about the dynamics of high-growth firms (Haltiwanger *et al*., 2014).

2.5.2 Innovation rate

This indicator definition is the percentage of those involved in TEA who indicate that their product or service is new to at least some customers and that few/no businesses offer the same product (GEM, 2021). It has already been used by previous studies (Arabiyat *et al.*, 2019; Bosma *et al*., 2018), and was chosen in the present study as one of the variables that indicate productive entrepreneurship.

Although Arabiyat *et al*. (2019) claim that innovation is a subjective notion, innovation of new ventures are more commonly found when managers have high-growth expectations, because it implies uncertainty and potential loss, that are only acceptable by ambitious entrepreneurs (McKelvie *et al*., 2017).

Bradley *et al*. (2021) defends institutional policies for innovative new firms, as they are important for long-term economic growth and social benefits, due to the ability to provide solution for unexpected crises (such as covid19 disruption), as well as breakthroughs for challenges such as access to healthcare, poverty reduction and others. Buffart *et al*. (2020), after analyzing data from 1700 ventures in the United States enrolled in the Small Business Development Center (SBDC), claim that the efficiency of government policies to promote innovative entrepreneurship depends on the disposal of participants to learn and share their growth aspiration to advisors.

2.5.3 Motivational index

The motivational index is a GEM indicator calculated by the percentage of those involved in TEA that are improvement-driven opportunity motivated, divided by the percentage of TEA that is necessity-motivated (GEM, 2021). This index or a similar GEM indicator has already been used in former studies (Amorós, Poblete, *et al*., 2019; Aparicio *et al.*, 2016; Bosma

et al., 2018; Fuentelsaz *et al*., 2019), and was chosen in the present study as one of the variables that indicate productive entrepreneurship.

Aparicio *et al*. (2016) suggests that institutions have no automatic impact, as normally assumed, with opportunity entrepreneurship being one mechanism that serves as a conduit for productive entrepreneurship. They found that informal institutions have a greater influence than formal institutions on this kind of entrepreneurship. Moreover, Boudreaux (2019) affirm that institutional improvement might not improve growth in developing countries if motivation is not considered.

Fuentelsaz *et al*. (2019) further explored the theme relating opportunity entrepreneurship to formal and informal institutions and found different results. Their research concludes that higher rates of opportunity entrepreneurship can be found in countries where the rules of the game are well defined (formal institutions), as well as on countries with higher individualism and lower uncertainty avoidance (cultural norms).

Table 3 summarizes what the four dependent variables indicates, as well as their justification for being used in the present study.

Table 3
Dependent variables and justification for its use

Variable	What indicates	Justification for its use
Total early-stage entrepreneurial activity (TEA)	Prevalence of entrepreneurship among adult population in each country.	It is a consolidated measure to quantity entrepreneurship and compare it between countries.
High job expectation	Willingness of startup founders to create a significant number of jobs.	Job creation is an important macroeconomic policy and high-growth new firms are important means to deliver it, being, therefore, associated to productive entrepreneurship.
Innovation Rate	New ventures that are working on a product or service that is new to the market (at least locally).	Innovation is one way of productive entrepreneurship as it is crucial to solve socio-economic issues and to foster economic development.
Motivational Index	To what extent entrepreneurs in a country are more opportunity oriented than necessity oriented.	Opportunity driven entrepreneurs are more likely to be engaged in productive types of entrepreneurships.

Source: Own Authorship.

Next section presents the hypothesis of this study built on the literature exposed in this chapter. It also presents a conceptual model to illustrate what is being tested by our models.

2.6 Theoretical background and hypothesis

The hypothesis of this study were built upon the theoretical background of the restraining impact of institutions (Aron, 2000; North, 1991; Williamson, 2000) on each country's entrepreneurial activity (Bjørnskov & Foss, 2016; Burns & Fuller, 2020), which impacts both the prevalence of entrepreneurship (Bosma *et al*., 2018; Chowdhury *et al*., 2019; Stenholm *et al*., 2013; Urbano & Alvarez, 2014) and its type (Arabiyat *et al*., 2019; Chowdhury *et al*., 2019; Stenholm *et al*., 2013; Urban, 2016, 2019). All the three hypotheses are anchored on the pillars of the consolidated framework of the CIP (Busenitz *et al*., 2000; Kostova, 1997; Scott, 1995), composed of regulatory institutions (Bowen & De Clercq, 2008; De Clercq *et al*., 2010; Levie & Autio, 2011), normative institutions (Autio *et al*., 2013; Hofstede 1980; Rarick & Han, 2015), and cognitive institutions (DiMaggio & Powell, 1991; Fuentelsaz *et al*., 2018; Liñán *et al*., 2011).

The baseline model uses the TEA to verify the hypothesis on the first level. Then, the three qualitative frames models are used to verify the hypothesis on the second level (level a), which assesses the impact of each institutional dimension on productive entrepreneurship (Baumol, 1990; Elert & Henrekson, 2021; Shane, 2009; Sobel, 2008). Finally, we estimate our four models separately, comparing differences between the developing and developing countries (Boudreaux, 2019; Chowdhury *et al*., 2019; Estrin & Mickiewicz, 2011), to verify the hypothesis on the third level (level b).

Hypothesis 1. Better cognitive institutions positively affect entrepreneurial activity.

H1a. These effects of cognitive institutions are maximized for productive entrepreneurial activity.

H1b. Cognitive institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.

Hypothesis 2. Better normative institutions positively affect entrepreneurial activity.

H2a. These effects of normative institutions are maximized for productive entrepreneurial activity.

H2b. Normative institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.

Hypothesis 3. Better regulatory institutions positively affect entrepreneurial activity.

H3a. These effects of regulatory institutions are maximized for productive entrepreneurial activity.

H3b. Regulatory institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.

Figure 2 illustrates the conceptual model of this study, indicating each hypothesis, on each arrow, and relating every institutional dimension with what is being verified.

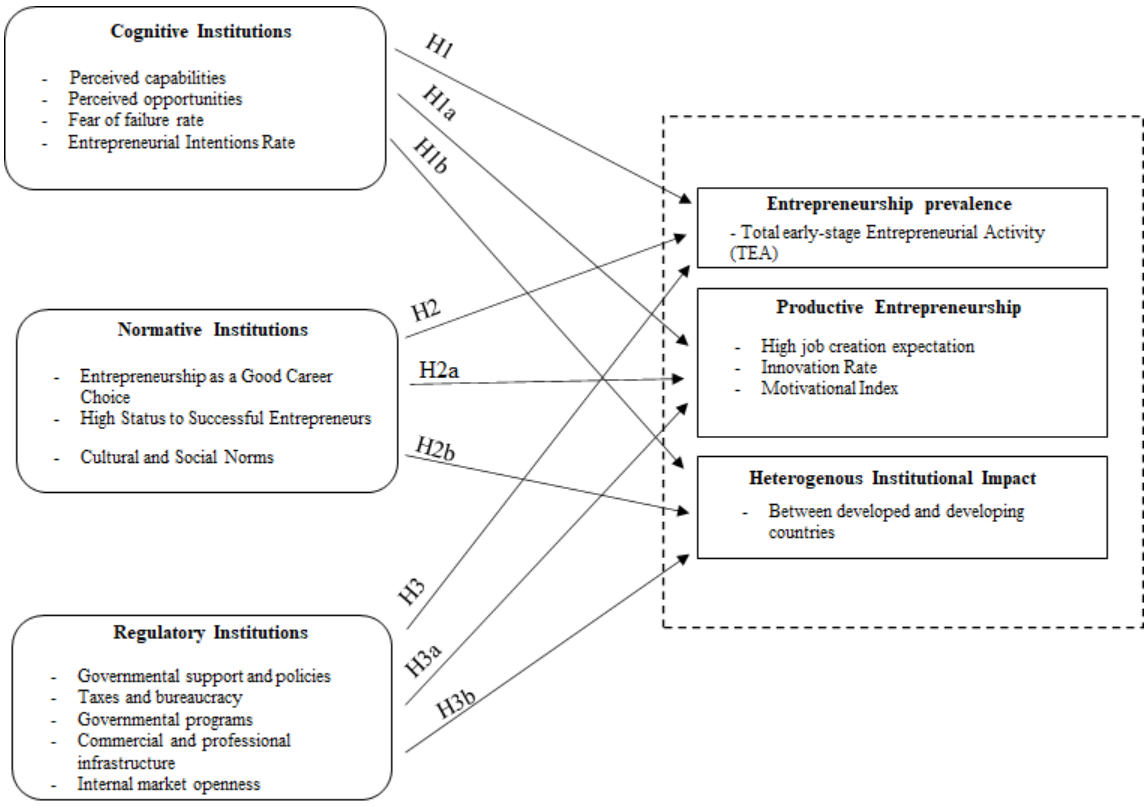

Figure 2. Conceptual Model.
Source: Own Authorship.

Table 4 exposes all hipothesis from this study, including the CIP pillar that it is related to and its number.

Table 4
Hypothesis summary

CIP Pillar	Number	Hypothesis
Cognitive	H1	Better cognitive institutions positively affect entrepreneurial activity.
	H1a	These effects of cognitive institutions are maximized for productive entrepreneurial activity.
	H1b	Cognitive institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.

Normative	H2	Better normative institutions positively affect entrepreneurial activity.
	H2a	These effects of normative institutions are maximized for productive entrepreneurial activity.
	H2b	Normative institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.
Regulatory	H3	Better regulatory institutions positively affect entrepreneurial activity.
	H3a	These effects of regulatoryinstitutions are maximized for productive entrepreneurial activity.
	H3b	Regulatory institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.

Source: Own Authorship.

3 Research Methodology

This chapter is divided in three sections. The first one defines the nature of this study and the econometric model chosen to answer the research question. The second section introduces the GEM data and the research variables. Last section exposes the models proposed by this study.

3.1 Nature and econometric model

According to the methodological framework proposed by Bryman & Bell (2015), the present study has an explanatory purpose, an empiricist approach, and a quantitative methodology.

In this study we apply panel data regressions, in which time series consisted of repeated observations of several countries are grouped to be analyzed simultaneously, leading to more interesting conclusions then the ones obtained by a single cross section data sample. (Wooldridge, 2000).

The advantages of panel data in relation to cross sections and time series are: (1) larger amount of data and (2) explanatory variables varying over two dimensions (individuals and time), resulting in more accurate estimators. (Wooldridge, 2000). Also, Hsiao (2003) claim that the panel data brings four major advantages for econometric estimation models: (1) increases degrees of freedom and reduces multicollinearity; (2) discriminates between competing economic hypothesis; (3) reduces estimation biases and (4) provides micro foundations for aggregated data analysis.

3.2 Study variables

All variables from this study were selected from the GEM (dependent, independent and controls). According to Levie *et al.* (2014) the GEM is the only globally harmonized set of data – at screening and processing level – dedicated to study individual-level entrepreneurial behavior across the globe.

The Global Entrepreneurship Monitor was initiated in 1997 by Paul Reynold and other researchers (Levie *et al*., 2014) and was first published in 1999, including 10 countries (Reynolds *et al*., 2000). Nowadays, the GEM is a consortium of national country teams, which conducts survey-based research on entrepreneurship around the world (GEM, 2021). According

to (Bosma *et al.*, 2020) the GEM completed 20 years of data in the 2019 survey, with more than 50 economies participating on the 2019 Adult Population Survey (APS), including 11 from the Middle East and Africa, 8 from Latin America and Caribbean, 8 from Asia and Pacific, and 23 from Europe and North America. More than 150 thousand individuals participated in the last APS.

The GEM represents a primary source of data, obtained by two different research set of indicators (Herrington & Coduras, 2019). The Entrepreneurial Behavior and Attitudes indicators are measured via the APS, which is a questionnaire, applied to a minimum of 2000 adults (18-64 years old) in each GEM country, designed to obtain information on the entrepreneurial activity, attitudes and aspirations of the individuals. The Entrepreneurial Framework Conditions (EFCs) is composed by the nine indicators that enhances or hinders the entrepreneurship on a given country and serves as basis for the National Expert Survey (NES), which is applied to 36 experts in each GEM country (GEM, 2021).

The conceptual framework of the GEM looks specifically to the role of the entrepreneurship – including the process of new venture creation and business development – to economic growth (Bosma *et al.*, 2020).

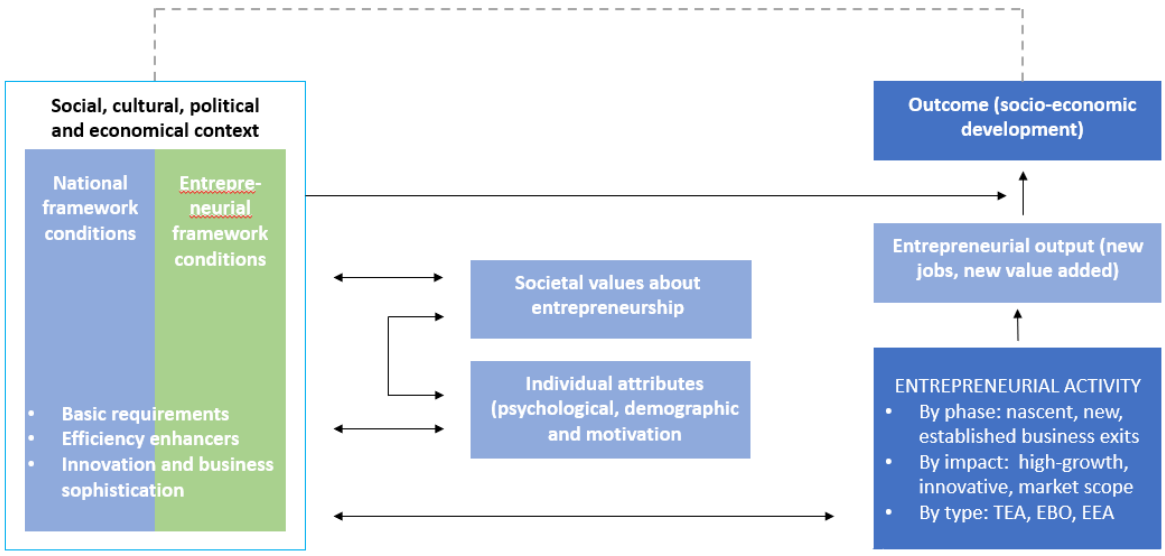

Figure 3. The GEM conceptual framework.
Source: Global Entrepreneurship Monitor 2019/2020 Global Report (Bosma *et al.*, 2020).

3.2.1 Dependent and independent variables

The 4 dependent variables (Y1 to Y4) - chosen to indicate the prevalence or quality of entrepreneurship in each country – and the 12 independent variables (X1 to X12) – chosen to

indicate an institutional dimension related to entrepreneurship in each country – are listed in Table 4.

Table 5
Analytic Variables used in the model

	Variable	Definition	Source	Study
Dependent	Total early-stage Entrepreneurial Activity (TEA) (Y1)	Total entrepreneurial activity - TEA (percentage of the population aged 18 to 64 involved in entrepreneurial activity)	GEM APS	Bosma *et al.* (2018); Chowdhury *et al.* (2019); Stenholm *et al.* (2013)
	High Job Creation Expectation (Y2)	Percentage of those involved in TEA who expect to create 6 or more jobs in 5 years	GEM APS	Autio *et al*. (2013); Bosma *et al* (2018)
	Innovation Rate (Y3)	Percentage of those involved in TEA who indicate that their product or service is new to at least some customers AND that few/no businesses offer the same product	GEM APS	Arabiyat *et al.* (2019); Bosma *et al*. (2018)
	Motivational Index (Y4)	Percentage of those involved in TEA that are improvement-driven opportunity motivated, divided by the percentage of TEA that is necessity-motivated	GEM APS	Amorós, Ciravegna, *et al.* (2019); Aparicio *et al.* (2016); Bosma *et al*. (2018); Fuentelsaz *et al*. (2019)
Regulatory	Governmental support and policies (X1)	The extent to which public policies support entrepreneurship - entrepreneurship as a relevant economic issue	GEM NES	Amorós, Poblete, *et al*. (2019)
	Taxes and bureaucracy (X2)	The extent to which public policies support entrepreneurship - taxes or regulations are either size-neutral or encourage new and SMEs	GEM NES	Arabiyat *et al.* (2019); Bowen & De Clercq (2008)
	Governmental programs (X3)	The presence and quality of programs directly assisting SMEs at all levels of government (national, regional, municipal)	GEM NES	Chowdhury *et al.* (2019)
	Commercial and professional infrastructure (X4)	The presence of property rights, commercial, accounting, and other legal and assessment services and institutions that support or promote SMEs	GEM NES	Boudreaux (2019)
	Internal market openness (X5)	The extent to which new firms are free to enter existing markets	GEM NES	Boudreaux (2019)
Cognitive	Perceived capabilities (X6)	Percentage of 18-64 population who believe they have the required skills and knowledge to start a business	GEM APS	Al Mamari *et al*. (2020); Chowdhury *et al.* (2019); De Clercq *et al*. (2010); Khursheed *et al.* (2019); Urban (2016)
	Perceived opportunities (X7)	Percentage of 18-64 population who see good opportunities to start a firm in the area where they live	GEM APS	Al Mamari *et al*. (2020); Chowdhury *et al.* (2019);

				Stenholm *et al.* (2013)
	Fear of failure rate (X8)	Percentage of the 18-64 population who agree that they see good opportunities but would not start a business for fear it might fail. NOTE: this is a percentage of those seeing good opportunities, and not the total adult population	GEM APS	Al Mamari *et al*. (2020); Arabiyat *et al*. (2019); Urbano & Alvarez (2014)
	Entrepreneurial Intentions Rate (X9)	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who are latent entrepreneurs and who intend to start a business within three years	GEM APS	Arabiyat *et al.* (2019); Liñán *et al.* (2011)
Normative	Entrepreneurship as a Good Career Choice (X10)	Percentage of 18-64 population who agree with the statement that in their country, most people consider starting a business as a desirable career choice	GEM APS	Arabiyat *et al.* (2019); Díez-Martín *et al*. (2016)
	High Status to Successful Entrepreneurs (X11)	Percentage of 18-64 population who agree with the statement that in their country, successful entrepreneurs receive high status	GEM APS	Díez-Martín *et al*. (2016); Stenholm *et al*. (2013)
	Cultural and Social Norms (X12)	The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income	GEM NES	Boudreaux (2019)

Source: Own Authorship.

3.2.2 Controls

The control variables are used to represent whatever other determinants the researcher wishes to examine (Durlauf, 2001). Four variables were chosen from the GEM NES as controls (financing for entrepreneurs, R&D transfer; internal market dynamics; and physical and services infrastructure) to account for other determinants that might be conducive to entrepreneurship (Arabiyat *et al*., 2019; Stenholm *et al*., 2013).

Table 6
Control Variables

	Variable	Definition	Source
Controls	Financing for entrepreneurs (X13)	The availability of financial resources — equity and debt — for small and medium enterprises (SMEs) (including grants and subsidies)	GEM NES
	R&D transfer (X14)	The extent to which national research and development will lead to new commercial opportunities and is available to SMEs	GEM NES

Internal market dynamics (X15)	The level of change in markets from year to year	GEM NES
Physical and services infrastructure (X16)	Ease of access to physical resources — communication, utilities, transportation, land, or space — at a price that does not discriminate against SMEs	GEM NES

Source: Own Authorship.

3.2.3 Data availability

Although there were 112 countries researched over the last 20 years in GEM, the panel data is unbalanced. The first year in which data for all independent and control variables is available is 2003. Therefore, for the TEA (Y1) and the high-job creation expectation (Y2) models, the data used comprise 2003 to 2019. Regarding the motivational index (Y4), the data used comprise 2010 (first year to show this variable) to 2018 (last year to show this variable). Finally, the innovation rate (Y3) model includes data from 2011 (first year to show this variable) to 2018 (last year to show this variable).

				DEPENDENT				REGULATORY					COGNITIVE				NORMATIVE			CONTROLS			
Year	Countries	Developed	Developing	Y1	Y2	Y3	Y4	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
2001	28	21	7	28	28			26	26	26	26	26	28	28	28				26	26	26	26	26
2002	37	25	12	37	37			34	34	34	34	34	37	37	37	37			33	34	34	34	34
2003	31	23	8	31	31			30	30	30	30	30	31	31	31	31	31	31	30	30	30	30	30
2004	34	24	10	34	33			29	29	29	29	29	34	34	34	34	34	34	29	29	29	29	29
2005	35	23	12	35	35			31	31	31	31	31	35	35	35	35	35	35	31	31	31	31	31
2006	42	21	21	42	42			37	37	37	37	37	42	42	42	42	42	42	37	37	37	37	37
2007	42	23	19	42	42			31	31	31	31	31	42	42	41	42	42	42	31	31	31	31	31
2008	43	18	25	43	43			31	31	31	31	31	43	43	43	43	42	43	31	31	31	31	31
2009	54	19	35	54	53			43	43	43	43	43	54	54	54	54	54	54	43	43	43	43	43
2010	59	22	37	59	59		59	54	54	54	54	54	59	59	59	59	58	58	54	54	54	54	54
2011	55	22	33	55	54	55	55	49	49	49	49	49	55	55	55	55	46	47	49	49	49	49	49
2012	67	23	44	67	66	67	67	67	67	67	67	67	67	67	67	67	58	58	67	67	67	67	67
2013	70	24	46	70	70	70	70	69	69	69	69	69	70	70	70	70	65	66	69	69	69	69	69
2014	70	26	44	70	70	70	70	70	70	70	70	70	70	70	70	70	63	63	70	70	70	70	70
2015	60	22	38	60	60	60	60	60	60	60	60	60	60	60	60	60	54	54	60	60	60	60	60
2016	64	26	38	64	64	64	64	64	64	64	64	64	64	64	64	64	61	61	64	64	64	64	64
2017	54	23	31	54	54	54	54	54	54	54	54	54	54	54	54	54	52	52	54	54	54	54	54
2018	49	23	26	59	49	49	59	49	49	49	49	49	49	49	49	49	47	47	49	49	49	49	49
2019	50	24	26	50	50			49	49	49	49	49	50	50	50	50	50	50	49	49	49	49	49

Figure 4. Number of countries per variable every year.
Source: Own authorship based on the GEM data.

A total of 112 countries is covered by the study. 45 of them were available at least 10 times in the GEM survey. 71 were available at least 5 times, while 41 were available less than 5 times.

3.2.4 Economy classification

In this study, countries were classified into developing and developed economies according to the criteria of the World Economic Forum (WEF) Global Competitiveness Index (World Economic Forum, 2017). The GEM also used the WEF criteria to classify economies. The WEF divides countries into factor-driven, efficiency-driven and innovation driven (Acs *et al*., 2008). Countries in the last stage (stage 3: innovation-driven) are developed countries, whereas countries in the other 2 stages, as well as countries in transition between one stage and another, are developing counties. Out of the 112 countries researched by the GEM from 2001 to 2019, 33 are developed economies (innovation-driven). The remaining 79 are classified as developing economies (53 efficiency-driven economies and 26 factor-driven economies).

Table 7
Developed Economies

DEVELOPED ECONOMIES **Stage 3: Innovation-driven**		
Country	**Income Level (WEF)**	**Region**
Australia	High	Asia and Oceania
Austria	High	Europe and North America
Belgium	High	Europe and North America
Canada	High	Europe and North America
Cyprus	High	Europe and North America
Denmark	High	Europe and North America
Finland	High	Europe and North America
France	High	Europe and North America
Germany	High	Europe and North America
Greece	High	Europe and North America
Hong Kong	High	Asia and Oceania
Iceland	High	Europe and North America
Ireland	High	Europe and North America
Israel	High	Asia and Oceania
Italy	High	Europe and North America
Japan	High	Asia and Oceania
Luxembourg	High	Europe and North America
Netherlands	High	Europe and North America
New Zealand	High	Asia and Oceania
Norway	High	Europe and North America
Portugal	High	Europe and North America
Puerto Rico	High	LatAm and Caribbean
Qatar	High	Asia and Oceania
Singapore	High	Asia and Oceania
Slovenia	High	Europe and North America
South Korea	High	Asia and Oceania
Spain	High	Europe and North America

Sweden	High	Europe and North America
Switzerland	High	Europe and North America
Taiwan	High	Asia and Oceania
United Arab Emirates	High	Asia and Oceania
United Kingdom	High	Europe and North America
United States	High	Europe and North America

Source: Own Authorship based on World Economic Forum (2017).

Table 8

Developing Economies

DEVELOPING ECONOMIES					
Stage 1: factor-driven			**Stage 2: Efficiency-driven**		
Country	**Income Level**	**Region**	**Country**	**Income Level**	**Region**
Algeria	Middle	Africa	Argentina	High	LatAm and Caribbean
Angola	Low	Africa	Armenia	Middle	Asia and Oceania
Bangladesh	Low	Asia and Oceania	Barbados	High	LatAm and Caribbean
Bolivia	Low	LatAm and Caribbean	Belarus	Middle	Europe and North America
Botswana	Middle	Africa	Belize	High	LatAm and Caribbean
Burkina Faso	Low	Africa	Bosnia and Herzegovina	Middle	Europe and North America
Cameroon	Low	Africa	Brazil	Middle	LatAm and Caribbean
Ethiopia	Low	Africa	Bulgaria	Middle	Europe and North America
Ghana	Low	Africa	Chile	High	LatAm and Caribbean
India	Low	Asia and Oceania	China	Middle	Asia and Oceania
Iran	Middle	Asia and Oceania	Colombia	Middle	LatAm and Caribbean
Madagascar	Low	Africa	Costa Rica	Middle	LatAm and Caribbean
Malawi	Low	Africa	Croatia	High	Europe and North America
Nigeria	Low	Africa	Czech Republic	High	Europe and North America
Pakistan	Low	Asia and Oceania	Dominican Republic	Middle	LatAm and Caribbean
Palestinian	Low	Asia and Oceania	Ecuador	Middle	LatAm and Caribbean
Philippines	Low	Asia and Oceania	Egypt	Low	Africa
Senegal	Low	Africa	El Salvador	Low	LatAm and Caribbean
Sudan	Low	Africa	Estonia	High	Europe and North America
Syria	Low	Asia and Oceania	Georgia	Low	Asia and Oceania
Tonga	Low	Asia and Oceania	Guatemala	Middle	LatAm and Caribbean
Uganda	Low	Africa	Hungary	High	Europe and North America
Vanuatu	Low	Asia and Oceania	Indonesia	Low	Asia and Oceania
Venezuela	Middle	LatAm and Caribbean	Jamaica	Middle	LatAm and Caribbean
Vietnam	Low	Asia and Oceania	Jordan	Middle	Asia and Oceania
Zambia	Low	Africa	Kazakhstan	Middle	Asia and Oceania
			Kosovo	Middle	Europe and North America
			Latvia	High	Europe and North America
			Lebanon	Middle	Asia and Oceania
			Libya	Low	Africa

Lithuania	High	Europe and North America
Malaysia	Middle	Asia and Oceania
Mexico	Middle	LatAm and Caribbean
Montenegro	Middle	Europe and North America
Morocco	Low	Africa
Namibia	Middle	Africa
North Macedonia	Middle	Europe and North America
Oman	High	Asia and Oceania
Panama	High	LatAm and Caribbean
Peru	Middle	LatAm and Caribbean
Poland	High	Europe and North America
Romania	Middle	Europe and North America
Russia	Middle	Europe and North America
Saudi Arabia	High	Asia and Oceania
Serbia	Middle	Europe and North America
Slovakia	High	Europe and North America
South Africa	Middle	Africa
Suriname	Middle	LatAm and Caribbean
Thailand	Middle	Asia and Oceania
Trinidad and Tobago	High	LatAm and Caribbean
Tunisia	Low	Africa
Turkey	Middle	Asia and Oceania
Uruguay	High	LatAm and Caribbean

Source: Own Authorship based on World Economic Forum (2017).

3.3 Models

To access the impact of the CIP on the prevalence of entrepreneurship, we propose a panel data regression model, with the TEA as dependent variable (equation 1).

$$TEA\ it = \beta 0 + \beta 1 Regulatory\ Institutions\ it + \beta 2 \text{Cognitive}\ Institutions\ it + \beta 3 \text{Normative}\ Institutions\ it + \beta k(\text{Controls})it + \varepsilon it \quad \textbf{Equation 1}$$

β0 = constant.

TEAit = the value for each i unit (country) on t time (year).

β1 to βk = the coefficient to be multiplied to each dimension, i.e., regulatory, cognitive, normative, and controls.

ε it = error term for each i (country) on t (year).

To verify the impact of the CIP on each qualitative frame (Y2 to Y4), we apply the same model, using a different dependent variable per equation, on a total of four equations (2 to 4).

$Ynit = \beta 0 + \beta 1 Regulatory\ Institutions\ it + \beta 2 Cognitive\ Institutions\ it + \beta 3 Normative\ Institutions\ it + \beta k(Controls) it + \varepsilon it$ **Equations 2 to 4**

$\beta 0$ = constant.

Ynit = for every Y, where n = 2 to 4, the value for each i unit (country) on t time (year). Y2 = high job creation expectation; Y3 = innovation rate; and Y4 = motivational index.

$\beta 1$ to βk = the coefficient to be multiplied to each dimension, i.e., regulatory, cognitive, normative, and controls.

ε it = error term for each i (country) on t (year).

Finally, to verify institutional differences among developing and developed economies, we run equations 1 to 4 on the two groups of countries separately.

4 Research Analysis and Findings

Chapter 4 shows and analyses results from our models. First section presents the descriptive statistics for all variables of the three samples (full sample, developing countries, and developed countries). Second section deals with the estimation method chosen for our models. Third section presents and analysis results of all models and samples, while last section conducts a comparison of these results between developed and developing countries.

4.1 Descriptive statistics

Table 9 displays the means, standard deviations, minimum and maximum value for each dependent variable, when considering full sample (developed and developing countries). The mean of TEA indicates the average percentage of adult population involved in early-stage entrepreneurship, which is 11.43%. Means of HJCE (High Job Creation Expectation) and IR (Innovation Rate) indicates the average percentage of those involved in TEA that are engaged in one of these types of entrepreneurships, i.e., 21.59% for HJCE and 25.79% for IR. The mean for MI (Motivational Index) indicates the average for the MI rate, which is calculated by the percentage of those in TEA that are motivated by opportunity, divided by those motivated by necessity. Thus, for the full sample, the average MI of 2.73 indicates that the amount of those in TEA motivated by OPP is 2.73 times the amount of those motivated by NEC.

All 4 dependent variables present considerable standard deviation, indicating a high dispersion of these data across countries. The standard deviation ‘between’ is an indicator of the variation between countries, while the standard deviation ‘within’ is an indicator of the variation of the same country over time. Since the values for the between variations are higher than the values for the within variations, for all the 4 dependent variables, it is possible to assess that the indicators vary more across countries than over time, when considering one single country.

Table 9 also shows the number of observations of every variable and the T-bar value, which is the average number of periods of the variable. For TEA, there is a total of 944 observations, and an average of 8.35 years of data for each country (considering 17 years of observations, from 2003 to 2019). For HJCE there is a total of 941 observations, and an average of 8.32 years of data for each country (considering 17 years of observations, from 2003 to 2019). For IR there is a total of 489 observations, and an average of 4.84 years of data for each country (considering 8 years of observations, from 2011 to 2018). Finally, for MI there is a total

of 548 observations, and an average of 5.26 years of data for each country (considering 9 years of observations, from 2010 to 2018).

Table 9
Full Sample Descriptive Statistics: dependent variables

		Full Sample				
Variable		Mean	Std. Dev.	Min	Max	Observations
TEA	overall	11.43979	7.568692	1.48	52.11	944
	between		9.058166	3.615	52.11	133
	within		3.068738	-0.730212	27.91038	T-bar = 8.35398
HJCE	overall	21.49562	11.0738	0.5	88.73	941
	between		11.28173	1.22	88.73	113
	within		6.479662	-10.10271	63.52062	T-bar = 8.32743
IR	Overall	25.79137	10.41192	0.76	58.7	489
	Between		9.273935	6.78	54.22375	101
	Within		5.245379	10.31637	50.64637	T-bar = 4.84158
MI	Overall	2.735967	2.281902	0.35	19.5	548
	Between		2.014963	0.508	11.91	104
	Within		1.260212	-4.414033	10.32597	T-bar = 5.26923

Source: Own Authorship.

Table 10 shows the same indicators of Table 9, but for the sample considering only developed countries. The mean of TEA, 7.43%, is lower than the full sample mean, indicating that TEA is less prevalent in developed countries. However, means for the three variables that indicate productive entrepreneurship are higher compared to the full sample means (HJCE = 22.35% vs. 21.49%; IR = 30.06% vs. 25.79%; MI = 3.91 vs. 2.73). Standard deviations are lower than full sample ones for TEA, HJCE and IR, and higher for IR. Overall, 'between' standard deviations are consistently lower when comparing to full sample, which indicate more homogeneous data among developed countries. This is also corroborated by the fact that 'within' standard deviations for developed countries are close to the 'between' standard deviations, however still lower than the latter, which indicates that variables vary more between countries than within countries over time.

Regarding the number of observations, it is smaller, since this sample is part of the full sample. However, higher T-bar numbers indicate that the average of periods that each country in this sample appears is higher (TEA = 13.15 out of 17 years of observations; HJCE = 13.12 out of 17 years of observations; IR = 6.09 out of 8 years of observations; MI = 6.62 out of 9 years of observations).

Table 10
Developed Countries Descriptive Statistics: dependent variables

Developed						
Variable		Mean	Std. Dev.	Min	Max	Observations
TEA	Overall	7.431935	3.248617	1.48	18.75	434
	Between		2.720778	3.681176	15.06	33
	Within		2.017346	1.015686	14.66944	T-bar = 13.1515
HJCE	Overall	22.35547	10.03082	3.22	67.29	433
	Between		8.689382	9.502353	49.26875	33
	Within		6.518796	-0.283277	64.38047	T-bar = 13.1212
IR	Overall	30.06254	8.069485	13.97	57.13	189
	Between		7.325307	19.034	49.87833	31
	Within		4.417068	17.64654	45.47754	T-bar = 6.09677
MI	Overall	3.919198	2.760813	0.87	19.5	212
	Between		2.451908	1.537778	11.91	32
	Within		1.662556	-3.230802	11.5092	T-bar = 6.625

Source: Own Authorship.

Table 11 presents the descriptive statistics of dependent variables for the sample containing only developing countries. Contrary to what was observed in developed countries, TEA mean of 14.85% is higher than full sample mean (entrepreneurship is more prevalent in developing countries), while the means of the three variables that indicate productive entrepreneurship are lower, when compared to full sample. Also, compared to full sample, standard deviations are slightly higher for TEA, HJCE and IR and lower for MI. For all variables 'between' standard deviations are much higher than 'within' deviations, which indicates that developing countries data are more heterogenous for these four variables. Finally, T-bar numbers indicate a lower number of periods for each country in the samples compared to developed countries (TEA = 6.37 out of 17 years of observations; HJCE = 6.35 out of 17 years of observations; IR = 4.28 out of 8 years of observations; MI = 4.66 out of 9 years of observations).

Table 11
Developing Countries Descriptive Statistics: dependent variables

Developing						
Variable		Mean	Std. Dev.	Min	Max	Observations
TEA	overall	14.85039	8.473517	1.88	52.11	510
	between		9.579954	3.615	52.11	80
	within		3.73961	2.680391	31.32098	T-bar = 6.375
HJCE	overall	20.76272	11.85145	0.5	88.73	508
	between		12.1255	1.22	88.73	80
	within		6.452549	-10.83562	55.37438	T-bar = 6.35
IR	overall	23.10053	10.82564	0.76	58.7	300
	between		8.940646	6.78	54.22375	70

	within		5.712996	7.625533	47.95553	T-bar = 4.28571
MI	overall	1.989405	1.502168	0.35	11.57	336
	between		1.325172	0 .508	7.41	72
	within		0.9231438	-0.7380952	8.023404	T-bar = 4.66667

Source: Own Authorship.

Table 12 shows the descriptive statistics of independent variables for the full sample (containing developing and developed countries). All regulatory variables, as well as cultural and social norms (normative variable), are an average of the scores attributed to each country, every year, based on the experts' answers in the NES survey. All cognitive and the remaining 2 normative variables are measured by the percentage of the adult population in each country that either answered positively to the question (cognitive variables) or agree to the statement (normative variables). Table 12 show all these independent variables means, standard deviations, between and within deviations, number of observations, and T-bar values for the full sample.

Table 12
Full Sample Descriptive Statistics: independent variables

			Full Sample				
	Variable		Mean	Std. Dev.	Min	Max	Observations
Regulatory	Governmental support and policies	overall	2.58060	0.495307	1.37	4.55	877
		between		0.429647	1.66	3.6875	112
		within		0.282833	1.27310	4.23589	T-bar = 7.83036
	Taxes and bureaucracy	overall	2.40274	0.571999	1.22	4.33	877
		between		0.509067	1.51368	4.112	112
		within		0.252149	1.19774	3.85274	T-bar = 7.83036
	Governmental programs	overall	2.61742	0.483700	1.2	3.75	877
		between		0.422239	1.658	3.58166	112
		within		0.239155	1.56659	3.4986	T-bar = 7.83036
	Commercial and professional infrastructure	overall	3.0474	0.377930	1.26	4.21	877
		between		0.301993	2.14	3.59	112
		within		0.204120	2.1674	3.90857	T-bar = 7.83036
	Internal market openness	overall	2.60662	0.366650	1.29	3.88	877
		between		0.293774	1.83363	3.38375	112
		within		0.204394	1.93162	3.50250	T-bar = 7.83036
Cog		overall	49.6238	15.23755	8.65	89.48	944

	Perceived capabilities	between		15.74498	12.58	89.0	113
		within		5.864738	22.8155	82.4288	T-bar = 8.35398
	Perceived opportunities	overall	40.9383	16.68608	2.85	87.28	944
		between		15.70491	8.44058	84.13	113
		within		9.39614	10.1450	89.4050	T-bar = 8.35398
	Fear of failure rate	overall	34.6512	9.350307	7.14	75.42	943
		between		9.686566	13.755	72.01	113
		within		6.248264	7.23813	71.2772	T-bar = 8.34513
	Entrepreneurial intentions	overall	19.8443	15.27428	0.75	90.95	916
		between		17.12318	2.76	68.475	113
		within		6.27486	-10.500	50.1077	T-bar = 8.10619
Normative	Entrepreneurship as a good career choice	overall	64.2030	14.13841	16.73	96.16	834
		between		13.01389	27.6812	95.29	111
		within		6.621128	19.2174	109.331	T-bar = 7.51351
	High status to successful entrepreneurs	overall	69.6786	11.05859	13.06	100	837
		between		10.04871	47.8794	100	111
		within		6.768065	12.9117	93.5846	T-bar = 7.54054
	Cultural and social norms	overall	2.84059	0.511935	0	4.59	877
		between		0.416777	2.10388	4.12388	112
		within		0.271429	-0.2084	3.68371	T-bar = 7.83036

Source: Own Authorship

Table 13 and table 14 consists in the same data of table 12, but for developed and developing countries, respectively. For all variables, in the three samples, it is observed that ‘between’ deviations are larger than ‘within’ deviations, which indicates that these variables vary more between countries than within countries, over time. It is also notable that regulatory scores are higher for developed countries than for developing ones, which is consistent with literature. However, cognitive perceptions for entrepreneurship are better in developing countries, compared to developed ones, as the means of the cognitive variables are higher, except for fear of failure rate (which shows that average adult in developing countries has less fear of failing in a new venture, therefore, lower is better for this variable). Regarding normative variables, developing countries also present better means for ‘entrepreneurship as a good carrier choice’ and ‘high status to successful entrepreneurs’. However, ‘cultural and social norms’ score mean was lower for developing countries compared to developed, which can be explained

by a different view of the experts compared to the average adult population in relation to the normative dimension.

As what was observed in the dependent variables, the T-bar values for the developed countries are higher than the T-bar values for the developing ones. This is because the average developed country in the GEM research appears in a larger number of periods compared to the average developed country.

Table 13
Developed Countries Descriptive Statistics: independent variables

			Developed				
	Variable		Mean	Std. Dev.	Min	Max	Observations
Regulatory	Governmental support and policies	overall	2.76298	0.463144	1.59	3.96	395
		between		0.389352	2.058235	3.55875	33
		within		0.264840	2.048821	3.78882	T-bar = 11.969
	Taxes and bureaucracy	overall	2.61675	0.615643	1.38	4.33	395
		between		0.602013	1.6225	4.112	33
		within		0.285019	1.773009	4.06675	T-bar = 11.969
	Governmental programs	overall	2.879924	0.436973	1.72	3.75	395
		between		0.3953	2.07	3.58166	33
		within		0.219135	2.220757	3.46781	T-bar = 11.969
	Commercial and professional infrastructure	overall	3.226734	0.366591	1.94	4.21	395
		between		0.311749	2.336667	3.59	33
		within		0.207098	2.665623	3.88562	T-bar = 11.969
	Internal market openness	overall	2.788684	0.356623	1.89	3.88	395
		between		0.286439	2.16375	3.38375	33
		within		0.224434	2.143683	3.68232	T-bar = 11.969
Cognitive	Perceived capabilities	overall	41.98931	10.99932	9	75.47	434
		between		10.77421	12.58	63.55	33
		within		4.537535	26.50773	61.3813	T-bar = 13.151
	Perceived opportunities	overall	36.85267	16.09144	5.25	81.56	434
		between		12.6659	8.440588	60.9729	33
		within		10.09568	14.47973	82.1510	T-bar = 13.151
	Fear of failure rate	overall	36.28763	8.25917	7.14	61.58	434
		between		6.070491	24.1325	50.2505	33
		within		5.953496	8.874549	57.3326	T-bar = 13.151

	Entrepreneurial intentions	overall	10.76983	7.200248	0.75	56.33	434
		between		7.254337	2.76	35.862	33
		within		3.98719	-19.4689	34.4510	T-bar = 12.515
Normative	Entrepreneurship as a good career choice	overall	56.8786	13.08503	16.73	85.83	371
		between		11.64769	27.68125	81.3458	33
		within		6.551493	11.89305	102.007	T-bar = 11.242
	High status to successful entrepreneurs	overall	68.8483	10.54422	13.06	93.49	371
		between		7.886755	52.57267	85.6592	33
		within		6.891795	12.08143	90.2513	T-bar = 11.242
	Cultural and social norms	overall	2.91969	0.589910	0	4.59	395
		between		0.507312	2.211667	4.12388	33
		within		0.315821	-0.12939	3.76282	T-bar = 11.969

Source: Own Authorship.

Table 14
Developing Countries Descriptive Statistics: independent variables

			Developing				
	Variable		Mean	Std. Dev.	Min	Max	Observations
Regulatory	Governmental support and policies	overall	2.431141	0.470519	1.37	4.55	482
		between		0.404805	1.66	3.6875	79
		within		0.297039	1.12364	4.08643	T-bar = 6.1012
	Taxes and bureaucracy	overall	2.227365	0.465799	1.22	3.95	482
		between		0.427468	1.51368	3.91	79
		within		0.221919	1.02236	3.01736	T-bar = 6.1012
	Governmental programs	overall	2.402303	0.408328	1.2	3.49	482
		between		03322595	1.658	3.17333	79
		within		0.254617	1.35147	3.28347	T-bar = 6.1012
	Commercial and professional infrastructure	overall	2.900436	0.319358	1.26	3.99	482
		between		0.251126	2.14	3.47	79
		within		0.201863	2.02043	3.7616	T-bar = 6.1012
	Internal market openness	overall	2.457427	0.301872	1.29	3.51	482
		between		0.242529	1.83363	3.10666	79
		within		0.186613	1.78242	3.35331	T-bar = 6.1012
Cognitive	Perceived capabilities	overall	56.12075	15.33765	8.65	89.48	510
		between		14.73	23.63	89.05	80
		within		6.797592	29.3124	88.9257	T-bar = 6.375
		overall	44.41518	16.40755	2.85	87.28	510

	Perceived opportunities	between		15.87094	14.02	84.13	80
		within		8.767074	13.6218	92.881	T-bar = 6.375
	Fear of failure rate	overall	33.25591	9.986966	10.43	75.42	509
		between		10.73672	13.755	72.01	80
		within		6.494871	10.3809	69.8819	T-bar = 6.3625
	Entrepreneurial intentions	overall	27.29523	16.10348	0.98	90.95	503
		between		17.02673	3.56	68.475	80
		within		7.662872	-3.0494	57.5585	T-bar = 6.2875
Normative	Entrepreneurship as a good career choice	overall	70.07199	12.07042	29.45	96.16	463
		between		10.49904	48.6233	95.29	78
		within		6.683475	37.4053	98.5799	T-bar = 5.935
	High status to successful entrepreneurs	overall	70.3397	11.41968	31.47	100	466
		between		10.63743	47.8794	100	78
		within		6.675356	37.8727	94.2457	T-bar = 5.9743
	Cultural and social norms	overall	2.775768	0.427662	1.62	3.92	482
		between		0.370197	2.10388	3.6225	79
		within		0.229070	2.03799	3.40910	T-bar = 6.1012

Source: Own Authorship.

Next section briefly discusses the estimation methods for panel data regressions and explains the method chosen by the present study.

4.2 Estimation methods

There are two different estimation methods for panel data. The fixed effects estimation is more suitable when the error terms μ can be correlated to at least one X regressor, while the random effects estimation considers that the error term μi is a random variable, not correlated to the independent variables (Wooldridge, 2000). For the present study, the fixed effects estimation was chosen as it enables consistent estimates of time-constant omitted variables upon dependent constructs (Wooldridge, 2000), a suitable feature for the assessment of cross-national entrepreneurial institutions.

To confirm the suitability of this estimation method, the Hausman test was applied to the 12 models (4 including full sample, 4 including only developed countries, and 4 considering only developing countries). 9 out of the 12 models presented prob>Chi2 lower than 0.05, which indicates that the fixed effects estimation is more suitable. Since it is important to compare

models using the same estimation method, the fixed effects estimation was applied to the 12 models of the present study. Table 15 shows the results of the Hausman tests.

Table 15
Hausman Tests for estimation methods

Hausman prob>Chi2	TEA	HJCE	IR	MI
Full Sample	0.001	0.0001	0.029	0.7719
Developed	0.0002	0.0000	0.8162	0.0000
Developing	0.0000	0.0000	0.0001	0.9326

Source: Own Authorship.

Next section presents and analyzes the results of all the models proposed by the present study, including the models using full sample data, developed countries data, and developing countries data.

4.3 Results

Table 16 shows the main results from the models containing full sample. Regarding the regulatory institutions, commercial and professional infrastructure has a negative and significant association with TEA at 5%, contrary to what was expected. Also, surprisingly, governmental support and polices present a negative and significant relationship to high job creation expectation at 5%. Taxes and bureaucracy related positively to innovation rate and motivational index, both significant at 5%, while internal market openness presented a positive association to innovation rate at 10%. Overall, results do not show a conclusive impact from the regulatory institutions either on TEA or on productive entrepreneurship, except from innovation rate, of which we found more evidence for a positive impact from the fact that two variables related positively to it.

Regarding the cognitive institutions, however, three out of four variables have positive and significant association with TEA and two out of four have positive and significant association with innovation rate. These evidence that indicate a positive impact from the cognitive institutions, especially on TEA, show the importance of individuals' cognition and intentions on entrepreneurship (entrepreneurial intentions rate relates positively and significantly to TEA, HJCE and IR). On the other hand, we found no conclusive evidence for the impact of normative institutions, as only cultural and social norms related positively and significantly to TEA (although this variable related negatively to HJCE).

The coefficient of determination R2 overall was higher for the TEA (65.55%) and motivational index (30.84%), indicating a higher proportion of the variance in the dependent variable that is explained by the independent variables. The R2 overall for HJCE and IR were extremely low, on the other hand. To assess a possible serial correlation of the dependent variables, we conducted some dynamic panel data models, following the estimation proposed by Arellano & Bond (1991). TEA presented a significant coefficient for the second difference Ar(2), HJCE presented a significant coefficient for the first difference Ar(1), and MI presented a significant coefficient for both Ar(1) and Ar(2). These results indicate the persistence of the dependent variable in TEA, HJCE and MI models.

Table 16
Full Sample Models

		Full Sample			
		TEA	HJCE	IR	MI
Regulatory Institutions	Governmental support and policies	-0.251	-2.784**	1.040	-0.356
		(0.514)	(1.190)	(1.396)	(0.317)
	Taxes and bureaucracy	0.163	0 .569	3.580**	0.779**
		(0.558)	(1.295)	(1.717)	(0.386)
	Governmental programs	0.279	-0.009	0.639	0.077
		(0.730)	(1.691)	(2.208)	(0.491)
	Commercial and professional infrastructure	-1.194**	0.329	-0.198	-0.117
		(0.636)	(1.472)	(1.773)	(0.401)
	Internal market openness	-0.122	2.654	3.795*	-0.460
		(0.713)	(1.656)	(2.024)	(0.453)
Cognitive	Perceived capabilities	0 .099***	0.061	-0.053	-0.018
		(0.020)	(0.048)	(0.080)	(0.016)
	Perceived opportunities	0.049***	-0.025	0.022	0.041***
		(0.013)	(0.031)	(0.052)	(0.011)
	Fear of failure rate	-0.010	0.059	0.117**	-0.005
		(0.017)	(0.040)	(0.058)	(0.013)
	Entrepreneurial intentions rate	0.183***	0.142***	0.140**	-0.012
		(0.017)	(0.040)	(0.055)	(0.011)
Normative	Entrepreneurship as a good career choice	-0.009	0.031	0.110	-0.023
		(0.020)	(0.047)	(0.076)	(0.016)
	High status to successful entrepreneurs	-0.024	0.026	-0.126	0.025
		(0.020)	(0.048)	(0.087)	(0.019)
	Cultural and social norms	0.913*	-2.457*	-0.063	-0.128
		(0.541)	(1.258)	(1.772)	(0.396)
Controls	Financing for entrepreneurs	YES	YES	YES	YES
	R&D transfer	YES	YES	YES	YES
	Internal market dynamics	YES	YES	YES	YES

Physical and services infrastructure	YES	YES	YES	YES
_cons	1.657	14.546**	28.087***	-1.337
	(2.854)	(6.616)	(9.943)	(2.184)
Ar(1)	0.021	-0.205***	0.157	-0.445***
Ar(2)	0.047***	-0.066	-0.072	-0.095***
Hausman prob>Chi2	0.001	0.0001	0.029	0.7719
Observations	776	773	441	495
Instruments	169	169	37	44
R2 within	0.2895	0.077	0.1113	0.0880
R2 between	0.6138	0.0149	0.0007	0.2796
R2 overall	0.6554	0.0011	0.0177	0.3084

Note. *** p<0.01, ** p<0.05, * p<0.1. Standards errors in parentheses. Fixed-effects estimations. Source: Own Authorship.

Table 17 shows the results from the models containing only developed countries. None of the regulatory variables related either to TEA or to IR. Internal market openness have a strong and positive association to HJCE at 10%, while taxes and bureaucracy have a positive relationship to MI at 5%. Like what was observed in full sample models, there is lack of evidence to indicate a positive impact of the regulatory institutions on both TEA and productive entrepreneurship.

Regarding the cognitive institutions, results were close to full sample on TEA, as the same three variables (perceived capabilities, perceived opportunities, and entrepreneurial intentions rate) related positively and significantly to it. However, on HJCE, fear of failure rate related negatively and significantly to it (as expected), but perceived capabilities related negatively and significantly to it, contrary to what was expected (which might be an evidence that cognitive institutional effects are not maximized for high-growth firms in the case of developed countries). Regarding IR model, no variable associated significantly to the dependent variable, while on MI model, perceived opportunities associated positively to the dependent variable at 1% (like what was observed in the full sample model).

In relation to the normative institutions, entrepreneurship as a good carrier choice associated positively at 1% to HJCE, but, surprisingly, high status to successful entrepreneurs related negatively at 5% to it. These mixed results, combined with no other significant relationship in the other models, indicate that normative institutions do not impact decisively both TEA and productive entrepreneurship, according to our panel data models. R2 of TEA (46.61%), IR (17.90%) and MI (29.36%) indicate a good proportion of the variance in the dependent variable that is explained by the independent variables. The Arellano-Bond models

indicate serial correlation for the dependent variables IR and MI, but no serial correlation for TEA and HJCE.

Table 17
Developed Countries Models

		Developed			
		TEA	HJCE	IR	MI
Regulatory Institutions	Governmental support and policies	0.021	-2.207	1.942	-0.438
		(0.454)	(1.774)	(1.864)	(0.664)
	Taxes and bureaucracy	0.365	-0.848	1.797	1.913**
		(0.448)	(1.754)	(2.301)	(0.781)
	Governmental programs	0.521	2.650	0.162	1.410
		(0.643)	(2.515)	(3.247)	(1.102)
	Commercial and professional infrastructure	-0.735	-2.293	4.230	0.422
		(0.597)	(2.333)	(2.878)	(0.999)
	Internal market openness	-0.565	4.010*	4.316	-0.620
		(0.605)	(2.380)	(2.860)	(0.984)
Cognitive	Perceived capabilities	0.063***	-0.175**	-0.056	-0.037
		(0.022)	(0.086)	(0.148)	(0.046)
	Perceived opportunities	0.068***	0.031	0.126	0.065***
		(0.010)	(0.041)	(0.076)	(0.023)
	Fear of failure rate	0.016	-0.164**	0.014	0.022
		(0.017)	(0.067)	(0.106)	(0.034)
	Entrepreneurial intentions rate	0.175***	0.008	-0.055	-0.020
		(0.022)	(0.090)	(0.097)	(0.033)
Normative	Entrepreneurship as a good career choice	-0.012	0.245***	-0.199	-0.055
		(0.017)	(0.068)	(0.151)	(0.045)
	High status to successful entrepreneurs	-0.006	-0.138**	0.150	0.078
		(0.016)	(0.065)	(0.173)	(0.055)
	Cultural and social norms	0.674	-1.553	-1.465	-1.408
		(0.450)	(1.767)	(2.629)	(0.914)
Controls	Financing for entrepreneurs	YES	YES	YES	YES
	R&D transfer	YES	YES	YES	YES
	Internal market dynamics	YES	YES	YES	YES
	Physical and services infrastructure	YES	YES	YES	YES
	_cons	-2.856	31.498***	30.650*	-5.144
		(2.550)	(9.999)	(15.878)	(5.399)
	Ar(1)	-0.010	-0.212	-0.535***	-0.430**
	Ar(2)	0.131	0.023	-0.476***	0.030
	Hausman prob>Chi2	0.0002	0.0000	0.8162	0.0000
	Observations	338	337	170	189
	Instruments	169	169	37	44
	R2 within	0.4772	0.1174	0.1092	0.1360

R2 between	0.4232	0.0033	0.1717	0.2916
R2 overall	0.4661	0.0119	0.1790	0.2936

Note. *** p<0.01, ** p<0.05, * p<0.1. Standards errors in parentheses. Fixed-effects estimations. Source: Own Authorship.

Table 18 shows the results from the models containing only developing countries. Taxes and bureaucracy have a strongly positive relationship to IR at 1%, and governmental support and policies presents a negative and significant relationship to HJCE at 5% (both results close to full sample). However, in comparison to full sample, internal market openness relationship to IR is not significant. Like what was observed in both full sample and developed countries models, there is not enough evidence to support a positive impact from the regulatory institutions in developing countries as well.

Regarding the cognitive institutions, however, there are more evidence that they play a positive role on both TEA and productive entrepreneurship. Perceived capabilities presented a positive relationship with TEA at 1%, and with HJCE at 5%. Perceived opportunities associated positively with MI at 5%. Entrepreneurial intentions rate has a positive relationship to TEA, HJCE, and IR, all at 1%. Nonetheless, surprisingly, fear of failure rate associated positively to HJCE and IR (contrary to what was expected). Overall, results show that cognitive institutions effects are not maximized for productive entrepreneurship, as more variables related positively to TEA than to the dependent variables indicating entrepreneurship quality.

Regarding the normative institutions, all the three variables were significant on the HJCE model, with entrepreneurship as good carrier choice, and cultural and social norms relating negatively to the dependent variable, and with high status to successful entrepreneurs having a positive relationship with it. Results indicate that normative environment may not be conducive to high-growth firms in developing countries, which can be partially offset by individuals seeking for high status as successful entrepreneurs. Entrepreneurship as a good career choice related positively to IR at 5%, while high status to successful entrepreneurs related negatively to IR at 10%. Other relationships were not significant, which indicate that normative institutions have no significant impact on TEA and only small effects (mostly negative) at two types of productive entrepreneurship (HJCE and IR).

Arellano-Bond tests showed serial correlations of HJCE and MI at 1 lag, and serial correlation of IR at 2 lags. R2 overall results indicate higher proportion of the dependent variables explained by the independent ones on TEA (56.97%) and IR (26,78%) models.

Table 18
Developing Countries Models

		Developing			
		TEA	HJCE	IR	MI
Regulatory Institutions	Governmental support and policies	-0.354	-2.620*	-1.678	-0.178
		(0.855)	(1.574)	(2.020)	(0.328)
	Taxes and bureaucracy	-0.660	2.460	7.114***	0.243
		(1.039)	(1.917)	(2.570)	(0.404)
	Governmental programs	0.882	-1.696	-0.011	-0.590
		(1.255)	(2.312)	(3.147)	(0.491)
	Commercial and professional infrastructure	-1.382	1.398	-1.926	-0.132
		(1.004)	(1.849)	(2.307)	(0.373)
	Internal market openness	0.048	-0.219	1.114	-0.596
		(1.229)	(2.263)	(2.849)	(0.447)
Cognitive	Perceived capabilities	0.137***	0.129**	-0.025	-0.014
		(0.032)	(0.059)	(0.099)	(0.014)
	Perceived opportunities	0.014	-0.066	-0.015	0.026**
		(0.026)	(0.048)	(0.077)	(0.012)
	Fear of failure rate	-0.021	0.155***	0.159**	-0.018
		(0.027)	(0.051)	(0.072)	(0.011)
	Entrepreneurial intentions rate	0.1798***	0.207***	0.205***	-0.011
		(0.024)	(0.045)	(0.068)	(0.010)
Normative	Entrepreneurship as a good career choice	0.001	-0.131**	0.228**	-0.004
		(0.035)	(0.065)	(0.095	(0.015)
	High status to successful entrepreneurs	-0.040	0.170**	-0.192*	0.010
		(0.037)	(0.068)	(0.105)	(0.016)
	Cultural and social norms	0.736	-3.638***	2.487	0.470
		(0.953)	(1.763)	(2.407)	(0.378)
Controls	Financing for entrepreneurs	YES	YES	YES	YES
	R&D transfer	YES	YES	YES	YES
	Internal market dynamics	YES	YES	YES	YES
	Physical and services infrastructure	YES	YES	YES	YES
	_cons	4.157	5.362	24.927*	-0.633
		(4.677)	(8.618)	(13.269)	(2.075)
	Ar(1)	0.074	-0.258*	0.020	-0.118*
	Ar(2)	0.067	-0.066	-0.162**	0.040
	Hausman prob>Chi2	0.0000	0.0000	0.0001	0.9326
	Observations	438	436	271	306
	Instruments	158	158	37	44
	R2 within	0.2788	0.1749	0.0928	0.1283
	R2 between	0.5362	0.0221	0.3433	0.0164
	R2 overall	0.5697	0.0021	0.2678	0.0928

Note. *** p<0.01, ** p<0.05, * p<0.1. Standards errors in parentheses. Fixed-effects estimations. Source: Own Authorship.

Next section compares the results of the significant variables' coefficients, between the two types of countries, to assess whether the institutional dimensions' effects on both TEA and productive entrepreneurship are heterogenous between developed and developing countries.

4.4 Comparison between developing and developed countries

Table 19 contains the comparison of the variables' coefficients between the same models with different samples (developed and developing countries). Regarding TEA models, perceived capabilities and entrepreneurial intentions rate presented coefficients that are slightly positive and significant in both samples, whereas perceived opportunities related positively to both models, but the relationship is significant only in the developed countries sample. Apart from these variables indicating cognitive institutions, no other variable related significantly to TEA.

Regarding HJCE, the differences are more pronounced. Government support and policies presented a strongly negative impact in both samples, but the relationship is significant only in developing countries sample. Internal market openness presented a strong and positive association to HJCE, at 10%, in the developed countries sample, but no significant relationship in the developing countries sample. These results indicate that regulatory institutions impact is heterogenous, for HJCE, between the two types of countries.

In the other two dimensions, HJCE results are heterogeneous between the two samples. In the cognitive dimension, perceived opportunities and fear of failure rate related negatively to HJCE in the developed countries samples, and positively to it in the developing countries sample (all significant relationships). Also, entrepreneurial intentions rate related positively and significantly only in the sample of developing countries. These results may be an evidence that in developing countries individuals may see themselves as more prepared and willing to start a new venture with high-growth aspirations, despite the stronger fear of failure in relation to developed countries.

Finally, regarding the normative variables, entrepreneurship as a good carrier choice and high status to successful entrepreneurs related to HJCE in opposite directions (when comparing the two samples), while cultural and social norms have a strongly negative and significant association to HJCE in developing countries, but no significant association to it in developed countries. Results also show that normative institutions impact on HJCE is heterogeneous between the two types of countries, with a rougher normative environment for

those willing to start high-growth new firms in developing countries (despite the societal recognition to the successful entrepreneurs).

Regarding the IR models, taxes and bureaucracy have an extraordinarily strong and significant relation to IR only in developing countries, which indicate that taxes and regulations are encouraging for SMEs in this type of countries. This is the only significant relationship between IR and regulatory variables; thus, we cannot argue that regulatory institutional effects are significantly different between the two types of countries.

Concerning other variables, IR related positively to fear of failure rate, entrepreneurial intentions rate, and entrepreneurship as a good carrier choice (all significant relationships) and related negatively and significantly to high status to successful entrepreneurs, all in the developing countries sample. Regarding developed countries sample, there was no significant relationship at all to IR. These results indicate that cognitive and normative institutional effects are heterogeneous between the two sample of countries, in IR models.

Finally, concerning MI, taxes and bureaucracy associated positively at 5% to it in only developed countries, while perceived opportunities related positively and significantly to it in the two samples. MI results do not evidence that effects from any institutional dimensions are heterogeneous between the two samples of countries.

Table 19
Color-labeled groups comparison: developing and developed countries

		Developed	**Developing**	**Developed**	**Developing**	**Developed**	**Developing**	**Developed**	**Developing**
		TEA	TEA	HJCE	HJCE	IR	IR	MI	MI
Regulatory Institutions	Gvmt. Supp. and policies	0.021	-0.354	-2.207	-2.620*	1.942	-1.678	-0.438	-0.178
		(0.454)	(0.855)	-1.774	-1.574	-1.864	-2.020	(0.664)	(0.328)
	Taxes and bureaucracy	0.365	-0.660	-0.848	2.460	1.797	7.114***	1.913**	0.243
		(0.448)	-1.039	-1.754	-1.917	-2.301	-2.570	(0.781)	(0.404)
	Governmental programs	0.521	0.882	2.650	-1.696	0.162	-0.011	1.410	-0.590
		(0.643)	-1.255	-2.515	-2.312	-3.247	-3.147	-1.102	(0.491)
	Comm. and prof. infrastructure	-0.735	-1.382	-2.293	1.398	4.230	-1.926	0.422	-0.132
		(0.597)	-1.004	-2.333	-1.849	-2.878	-2.307	(0.999)	(0.373)
	Internal market openness	-0.565	0.048	4.010*	-0.219	4.316	1.114	-0.620	-0.596
		(0.605)	-1.229	-2.380	-2.263	-2.860	-2.849	(0.984)	(0.447)
Cognitive	Perceived capabilities	0.063***	0.137***	-0.175**	0.129**	-0.056	-0.025	-0.037	-0.014
		(0.022)	(0.032)	(0.086)	(0.059)	(0.148)	(0.099)	(0.046)	(0.014)
	Perceived opportunities	0.068***	0.014	0.031	-0.066	0.126	-0.015	0.065***	0.026**
		(0.010)	(0.026)	(0.041)	(0.048)	(0.076)	(0.077)	(0.023)	(0.012)

	Fear of failure rate	0.016	-0.021	-0.164**	0.155***	0.014	0.159**	0.022	-0.018
		(0.017)	(0.027)	(0.067)	(0.051)	(0.106)	(0.072)	(0.034)	(0.011)
	Entrepreneurial intentions rate	0.175***	0.179***	0.008	0.207***	-0.055	0.205***	-0.020	-0.011
		(0.022)	(0.024)	(0.090)	(0.045)	(0.097)	(0.068)	(0.033)	(0.010)
Normative	Entr.as a good career choice	-0.012	0.001	0.245***	-0.131**	-0.199	0.228**	-0.055	-0.004
		(0.017)	(0.035)	(0.068)	(0.065)	(0.151)	(0.095	(0.045)	(0.015)
	High status to succ. Entr.	-0.006	-0.040	-0.138**	0.170**	0.150	-0.192*	0.078	0.010
		(0.016)	(0.037)	(0.065)	(0.068)	(0.173)	(0.105)	(0.055)	(0.016)
	Cultural and social norms	0.674	0.736	-1.553	-3.63***	-1.465	2.487	-1.408	0.470
		(0.450)	(0.953)	-1.767	-1.763	-2.629	-2.407	(0.914)	(0.378)

Color label	
	slight significant negative impact
	strong significant negative impact
	slight significant positive impact
	strong significant positive impact
	extraordinarily strong significant positive impact

Note. *** p<0.01, ** p<0.05, * p<0.1. Standards errors in parentheses. Fixed-effects estimations. Source: Own Authorship.

Next chapter validates the hypothesis of the present study and discusses its main findings in relation to literature.

5 Hypothesis Validation and Discussion

This chapter contains two sections. The first one conducts the validation of the hypothesis presented at the end of Chapter 2, while the second section is a discussion based on both our results and literature.

5.1 Hypothesis validation

Based on our full sample TEA model, we found enough evidence to support H1, as the variables that indicate better cognitive institutions are positively associated to entrepreneurial activities. We found no evidence, however, to support H1a, as, overall, more variables related positively to TEA than to the three variables that indicate productive entrepreneurship. Finally, regarding H1b, we found some evidence to partially support it, as the positive impact of cognitive variables in both HJCE and IR models is higher in developing countries, indicating that cognitive institutional effects are heterogeneous for productive entrepreneurship among these two types of countries.

Also, we found not enough support for H2, as only cultural and social norms related positively to TEA out of three variables. Regarding H2a, we found no support to claim that normative institutional effects are maximized for productive entrepreneurship, as the only significant association between one variable and all three dependent variables indicating productive entrepreneurship, in full sample models, is a strongly negative association between cultural and social norms and HJCE at 10%. Lastly, we found evidence to partially support H2b, which states that the normative institutional effects are heterogeneous between developed and developing countries, as results in HJCE and IR models were mostly different between these two types of countries, indicating a more tough normative environment for productive entrepreneurship in developing countries.

Regarding the regulatory dimension, based on our full sample model, we found no evidence to support H3, as none of the regulatory variables associated positively to TEA. We also found not enough evidence to support H3a, which hypotheses that the effects of regulatory institutions are maximized for productive entrepreneurship, even though two variables (taxes and bureaucracies and internal market openness) related positively and significantly to IR. We also found not enough support for H3b, which states that regulatory effects are heterogenous among developed and developing countries, although there are some differences in specific variables, in specific models. They are: (1) the strong positive association between internal

market openness and HJCE in developed countries, but not in developing ones; (2) the significance of the strongly negative relationship between governmental support and programs and HJCE at 10% only in developing countries (negative relationship not significant in developed countries sample); (3) the significance of the strongly positive relationship between taxes and bureaucracy and IR at 1% only in developing countries (positive relationship not significant in developed countries sample); and (4) the significance of the positive relationship between taxes and bureaucracy and MI at 5% only in developed countries (positive relationship not significant in developing countries sample).

Table 20
Hypothesis validation summary

CIP Pillar	Number	Hypothesis	Validation
Cognitive	H1	Better cognitive institutions positively affect entrepreneurial activity.	supported
	H1a	These effects of cognitive institutions are maximized for productive entrepreneurial activity.	no evidence to support
	H1b	Cognitive institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.	partially supported
Normative	H2	Better normative institutions positively affect entrepreneurial activity.	not enough support
	H2a	These effects of normative institutions are maximized for productive entrepreneurial activity.	no evidence to support
	H2b	Normative institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.	partially supported
Regulatory	H3	Better regulatory institutions positively affect entrepreneurial activity.	no evidence to support
	H3a	These effects of regulatory institutions are maximized for productive entrepreneurial activity.	not enough support
	H3b	Regulatory institutional effects associated with entrepreneurial activity are heterogenous among developed and developing countries.	not enough support

Source: Own Authorship.

Next section discusses the main findings and insights from the present study, relating it to literature, to fulfill our research objectives and answer the research question.

5.2 Discussion

This study aimed to answer what is the impact of the CIP on the entrepreneurial activities of developed and developing countries, including both TEA and productive entrepreneurship. Our hypothesis, which suggested that improved quality in each of the CIP pillars (cognitive, normative, and regulatory) resulted in more entrepreneurial activities, and higher entrepreneurial quality, were based in literature. Also, the hypothesis of the heterogeneity of institutional effects among developed and developing countries has support in literature. The approach used to reach these hypothesis was based on the consensus that entrepreneurship is maximized or hindered by the surrounding institutional environment (Bjørnskov & Foss, 2016) and that institutional quality drives the set of payoffs to encourage productive entrepreneurship (Baumol, 1990; Burns & Fuller, 2020; Sobel, 2008). Ultimately, this line of research is grounded in the NIE (Henisz, 2000; North, 1991; Williamson, 2000), which theorized that differences in the countries' level of economic development is due to differences in their institutional quality, with such view being reinforced by empirical studies for the case of institutional impact on entrepreneurship among developed and developing countries (Amorós, Ciravegna, *et al*., 2019; Chowdhury *et al*., 2019; Naudé, 2011).

Firstly, none of the hypothesis that claimed that institutional quality would maximize productive entrepreneurship could be confirmed (H1a, H1b and H1c). This is an evidence that it is an enormous challenge to formulate politics for this type of entrepreneurship as it is only a minority of total entrepreneurship. To this extent, Shane (2009) alerted to the fact that encouraging entrepreneurship is a bad public policy, as the average entrepreneur is actually a self-employer with no high-growth aspirations. Moreover, it is important to emphasize the near-stochastic nature of productive entrepreneurship in macro analysis. In the present study, the coefficients of determination R2 overall for all models with dependent variables that indicated productive entrepreneurship were below 31%. In some cases, the R2 overall were below 3%, such as: full sample IR and HJCE, developed countries HJCE, and developing countries HJCE. These low R2 overall indicate high level of randomness in these models, which corroborates to the lack of support for our hypothesis concerning productive entrepreneurship. Additionally, it is important to state that a macroeconomic analysis has some limitations to explain individuals' behavior and intentions within countries, which could be better explored by other sources of data, as GEM does not provide them.

Secondly, the only hypothesis that could be confirmed is H1 (cognitive institutions positively affect TEA). Two of the cognitive variables (perceived capabilities and entrepreneurial intentions rate) related positively and significantly to TEA in all models with

different samples (full sample, developed countries, and developing countries sample). This is consistent with previous studies, such as Díez-Martín *et al*. (2016) who found that the cognitive dimension influence on entrepreneurial activity is stronger than both the normative and regulatory ones. These results might also be an evidence that individuals' attributes exert a stronger impact on entrepreneurial activity than macroeconomic policies, however, authors have been emphasizing the importance of an education that reinforces perceived capabilities (Bosma *et al*., 2018), self-confidence and individuals' skills (Aparicio *et al*., 2016) to achieve economic growth through encouraging entrepreneurship, especially opportunity entrepreneurship.

As matter of fact, although H1a (cognitive impact is maximized for productive entrepreneurship) could not be confirmed, the variable perceived opportunities related positively and significantly to MI in the three samples models. The impact of perceived opportunities had already been associated previously to entrepreneurship quantity (Chowdhury *et al*., 2019) and entrepreneurial innovativeness (Fuentelsaz *et al*., 2019). Therefore, our results reinforce the idea that an education enhancing individuals' cognition towards entrepreneurship should be encouraged, stimulating awareness of perceived capabilities, perceived opportunities, and risk-tolerance. If one wants to call this a macroeconomic policy, then it is the most relevant policy for entrepreneurship, especially in developing countries, where TEA is higher, but OPP entrepreneurship is lower. Since individuals starting businesses for necessity are more prevalent in the poorest countries, then encouraging opportunity recognition could enhance productive entrepreneurship in these countries, contributing to economic growth, at last. Thus, it is important to develop types of courses that could be efficient to this matter, since traditional in-class courses has not proved to be efficient (Boh *et al*., 2016).

Thirdly, even though we could not confirm H2 and H3 (impact of regulatory and normative dimensions on entrepreneurial activity), some variables presented some strong association to their dependent variables and are worthy to mention. The surprisingly negative relationship between commercial and professional infrastructure and TEA is possibly because TEA is more prevalent in developing countries due to necessity entrepreneurship and these countries unrelatedly present poorer infrastructure (therefore not a causal relationship). Moreover, the strongly negative association between governmental support and policies and HJCE (especially on developing countries) is another evidence of the inefficiency of macroeconomic policies to foster productive entrepreneurship.

On the other hand, taxes and bureaucracies (taxes or regulations are either size-neutral or encourage new SMEs) had a strong association to IR on developing countries and to MI on developed countries and, alongside with the strong positive impact of internal market openness in developed countries, are consistent with Aidis *et al*. (2012), who found a significant negative relation between state size and entrepreneurship, and a positive relation between market freedom and new business creation. These results suggest some interesting insights for policymakers, as, even though policies in general are inefficient, lowering taxation for innovative or high-growth new ventures may be a worthy policy. To this extent, the discussion from Shane (2009) becomes even more relevant, as it hard to point out which ones of the large amount of SMEs will turn into productive new ventures. Then, some research is needed on a micro level to clarify this matter and come up with new solutions for this problem.

Fourthly, 10 out of the 11 significant and positive relationship between independent and dependent variables in developing countries came from informal institutions variables (normative and cognitive). Researchers have warned to the risk of formal institutional policies that may hinder cultural drivers of entrepreneurship, in this type of countries (Cullen *et al.*, 2014), due to the institutional incongruence (Fredström *et al.*, 2020), as informal institutions have more influence in OPP entrepreneurship in developing countries (Aparicio *et al*., 2016). Therefore, our results, which were consistent to literature, emphasize that no other formal policies, apart from those that easy regulation and taxation for new SMEs, should be taken in developing countries (education is another exception).

Lastly, we have discussed our results to comply with our research objectives, however, we still need to answer our research question: what is the impact of the Country Institutional Profile on the entrepreneurial activities of developed and developing countries? The answer is: the impact is limited and specific, not embracing. To this extent, we must call the attention that the argument that institutions are vital to entrepreneurship are mostly historical and qualitative, and our empirical results indicate a possible epiphenomenon. Literature consensus suggests that institutions are a primary cause of productive entrepreneurship, which, in turn, produces economic growth, however we should not discard the hypothesis that it is the economic development that serves as fuel for institutional improvement. Elert & Henrekson (2021) claim that this causality is bidirectional, as entrepreneurship is also a key factor to institutional change. One evidence of that is the case of China's recent economic growth, where Su (2020) points out to a co-evolution between institutions and entrepreneurship, as entrepreneurs were initially scarce in the country and, as they were becoming more prevalent, they started to occupy

political positions to influence institutions. Even in the NIE, some authors such as Glaeser *et al*. (2004) and Przeworski (2004) discuss that institutions might be either caused by economic growth or the relationship is bi-directional. Further research on the theme is necessary.

6 Conclusion

This study aimed to assess the impact of the CIP on the entrepreneurial activity of developed and developing countries. To accomplish our objectives, we applied panel data regression models using GEM data (APS and NES research) of 112 countries, from 2003 to 2019, with TEA indicating total entrepreneurship and three other dependent variables indicating productive entrepreneurship. To compare the results between developing and developed countries we ran all our models considering three different samples: full sample, developed countries sample, and developing countries sample.

Our results, which contribute to literature, indicate that the cognitive dimension influences positively on total entrepreneurship, while the normative and regulatory dimensions impact on the entrepreneurial activity could not be supported. Another contribution is our empirical evidence that institutional quality does not maximize productive entrepreneurship, drawing attention to the fact that macroeconomic policies for this matter are mostly inefficient, and policymakers should be looking only to specific effects, such as lowering taxation for innovative and high-growth SMEs.

By comparing developing and developed countries results, we contribute to literature with evidence that institutional effects are partially heterogeneous among these countries, with informal institutions being more relevant for developing countries than formal ones. To this extent, policymakers should be even more careful with formal regulations that could hinder cultural drivers of productive entrepreneurship in developing countries. However, our results encourage the development of courses that could enhance individuals' cognitive education towards productive entrepreneurship, in both types of countries, by promoting risk-tolerance, awareness of perceived capabilities and opportunity recognition.

Nonetheless, this study has some limitations. Firstly, the panel data of 112 countries is unbalanced, with unequal observations between countries from 2003 to 2019. Secondly, the use of a single source of data, the GEM, result in limitations coming from the nature of this data. The APS research, for instance, is a subjectivist source of data, and comparing this type of data among countries for institutions might bring differences between how an individual of a country views its institutions in comparison to an international expert, for instance (individuals might underrate or overrate their institutions because they do not have comparison basis). Even the NES research has some limitations as some large countries with different regions, ethnicities, nationalities, and so forth, might have two experts with completely different views of the countries' institutions. Thirdly, a macro analysis such as the one conducted by this study has

some clear limitations in understanding cultural and individual behaviors within countries, on a micro level, that could have some impact on both TEA and productive entrepreneurship. Moreover, it is likely that a lot of information was lost on the process of transforming something as intangible as institutions into objective indicators. Lastly, the lack of moderating variables such as venture capital availability, technological resources availability, and infrastructure, can result in some non-captured effects of institutions under specific conditions.

As recommendations for future research, we include:

- Exploit a bi-directional relationship between institutions and entrepreneurship, or, at least to what extent does total and productive entrepreneurship have some impact on the country's institutions.
- Future research willing to further explore the constraining impact of institutions on total and productive entrepreneurship should include other sources of data that could mitigate some limitations of the GEM data for specific variables or, even, some dimensions. Thus, the researcher could explore moderating variables and some other non-institutional dimensions, such as resources availability, infrastructure suitability, and so forth.
- Explore individual and cultural drivers of productive entrepreneurship, on a micro level, by assessing different subjects that might impact on it, such as the antecedents of entrepreneurial intentions (Khursheed *et al*., 2019), proactive/responsive market approach (Narver *et al*., 2004), cognitive aspects, and cultural perceptions (such as the ones explored by this study, but on an individual's level perception). Future research can also perform a multilevel study, comparing macro and micro levels determinants of productive entrepreneurship.
- Future qualitative research on the theme can explore what other issues are relevant to compose each institutional dimension, and what other dimensions are important in institutional studies, contributing to a better institutional framework, that could reduce limitations in future quantitative studies.
- Research in Education field can propose and test forms of courses that could develop some competences appointed by the present and former studies, which could have an impact on the likelihood of an individual to become a productive entrepreneur, such as: awareness and development of perceived capabilities;

opportunity recognition and willingness to exploit it; risk-tolerance and risk management.

These topics would add some knowledge on this important theme, that has been on the radar of policymakers worldwide. Further clarification can improve the decision making of those agents towards economic growth through productive entrepreneurship.

References

Acs, Z. J., Desai, S., & Hessels, J. (2008). Entrepreneurship, economic development and institutions. *Small Business Economics*, *31*(3), 219–234. https://doi.org/10.1007/s11187-008-9135-9.

Acs, Z. J., Estrin, S., Mickiewicz, T., & Szerb, Ll. (2017). Institutions, Entrepreneurship and Growth: The Role of National Entrepreneurial Ecosystems. *SSRN Electronic Journal*, 1–35. https://doi.org/10.2139/ssrn.2912453.

Ács, Z. J., & Varga, A. (2005). Entrepreneurship, agglomeration and technological change. *Small Business Economics*, *24*(3), 323–334. https://doi.org/10.1007/s11187-005-1998-4.

Adenutsi, D. E. (2009). Entrepreneurship, job creation, income empowerment and poverty reduction in low-income economies. *MPRA Paper*, *29569*, 1–21. http://ideas.repec.org/p/pra/mprapa/29569.html.

Aidis, R., Estrin, S., & Mickiewicz, T. M. (2012). Size matters: Entrepreneurial entry and government. *Small Business Economics*, *39*(1), 119–139. https://doi.org/10.1007/s11187-010-9299-y.

Al Mamari, F., Mondal, S., Al Shukaili, A., & Kassim, N. M. (2020). Effect of self-perceived cognitive factors on entrepreneurship development activities: An empirical study from Oman global entrepreneurship monitor survey. *Journal of Public Affairs*, *April*. https://doi.org/10.1002/pa.2363.

Aldrich, H. E., & Fiol, C. M. (1994). Fools Rush in ? The Institutional Context of Industry Creation Author (s): Howard E . Aldrich and C . Marlene Fiol Published by : Academy of Management Stable URL : http://www.jstor.com/stable/258740 REFERENCES Linked references are available on JSTOR f. *Academy of Management Review*, *19*(4), 645–670.

Amorós, J. E., Ciravegna, L., Mandakovic, V., & Stenholm, P. (2019). Necessity or Opportunity? The Effects of State Fragility and Economic Development on Entrepreneurial Efforts. *Entrepreneurship: Theory and Practice*, *43*(4), 725–750. https://doi.org/10.1177/1042258717736857.

Amorós, J. E., Poblete, C., & Mandakovic, V. (2019). R&D transfer, policy and innovative ambitious entrepreneurship: evidence from Latin American countries. *Journal of Technology Transfer*, *44*(5), 1396–1415. https://doi.org/10.1007/s10961-019-09728-x.

Aparicio, S., Urbano, D., & Audretsch, D. (2016). Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence. *Technological Forecasting and Social Change*, *102*, 45–61. https://doi.org/10.1016/j.techfore.2015.04.006.

Arabiyat, T. S., Mdanat, M., Haffar, M., Ghoneim, A., & Arabiyat, O. (2019). The influence of institutional and conductive aspects on entrepreneurial innovation: Evidence from GEM data. *Journal of Enterprise Information Management*, *32*(3), 366–389. https://doi.org/10.1108/JEIM-07-2018-0165.

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies*, *58*(2), 277–297. https://doi.org/10.2307/2297968.

Aron, J. (2000). Growth and institutions: A review of the evidence. *World Bank Research Observer*, *15*(1), 99–135. https://doi.org/10.1093/wbro/15.1.99.

Åstebro, T., & Tåg, J. (2015). Entrepreneurship and job creation. In *IFN Working Paperer*.

Audretsch, D. B., & Keilbach, M. C. (2007). Entrepreneurial Capital and Economic Growth. *Oxford Review OfEconomic Policy*, *23*, 63–78.

Audretsch, D. B., & Thurik, A. R. (2000). Capitalism and democracy in the 21st century: From the managed to the entrepreneurial economy. *Journal of Evolutionary Economics*, *10*(1–2), 17–34. https://doi.org/10.1007/s001910050003.

Autio, E., Pathak, S., & Wennberg, K. (2013). Consequences of cultural practices for entrepreneurial behaviors. *Journal of International Business Studies*, *44*(4), 334–362. https://doi.org/10.1057/jibs.2013.15.

Autio, E., & Rannikko, H. (2016). Retaining winners: Can policy boost high-growth entrepreneurship? *Research Policy*, *45*(1), 42–55. https://doi.org/10.1016/j.respol.2015.06.002.

Baumol, W. J. (1990). Entrepreneurship: Productive, unproductive, and destructive. *Journal of Business Venturing*, *11*(1), 3–22. https://doi.org/10.1016/0883-9026(94)00014-X.

Bjørnskov, C., & Foss, N. J. (2016). Growth : What do we know And what do we still. *Academy of Management Perspectives*, *30*(3), 292–315.

Boh, W. F., De-Haan, U., & Strom, R. (2016). University technology transfer through entrepreneurship: faculty and students in spinoffs. *Journal of Technology Transfer*, *41*(4), 661–669. https://doi.org/10.1007/s10961-015-9399-6.

Bosma, N., Content, J., Sanders, M., & Stam, E. (2018). Institutions, entrepreneurship, and economic growth in Europe. *Small Business Economics*, *51*(2), 483–499. https://doi.org/10.1007/s11187-018-0012-x.

Bosma, N., Hill, S., Ionescu-somers, A., Kelley, D., Levie, J., & Tarnawa, A. (2020). *Global Entrepreneurship Monitor*.

Boudreaux, C. (2019). Entrepreneurship, Institutions, and Economic Growth: Does the Level of Development Matter? *ArXiv*, 1–30.

Bowen, H. P., & De Clercq, D. (2008). Institutional context and the allocation of entrepreneurial effort. *Journal of International Business Studies*, *39*(4), 747–767. https://doi.org/10.1057/palgrave.jibs.8400343.

Bradley, S. W., Kim, P. H., Klein, P. G., McMullen, J. S., & Wennberg, K. (2021). Policy for Innovative Entrepreneurship: Institutions, Interventions, and Societal Challenges†. *Strategic Entrepreneurship Journal*, *February*, 1–18. https://doi.org/10.1002/sej.1395.

Brouwer, M. T. (2002). Weber, Schumpeter and Knight on entrepreneurship and economic development. *Journal of Evolutionary Economics*, *12*(1–2), 83–105. https://doi.org/10.1007/s00191-002-0104-1.

Bruton, G. D., Ahlstrom, D., & Li, H. L. (2010). Institutional theory and entrepreneurship: Where are we now and where do we need to move in the future? *Entrepreneurship: Theory and Practice*, *34*(3), 421–440. https://doi.org/10.1111/j.1540-6520.2010.00390.x.

Bryman, Alan & Bell Emma. (2015). Business research methods. Oxford: Oxford University Press.

Buffart, M., Croidieu, G., Kim, P. H., & Bowman, R. (2020). Even winners need to learn: How government entrepreneurship programs can support innovative ventures. *Research Policy*, *49*(10), 104052. https://doi.org/10.1016/j.respol.2020.104052.

Burns, S., & Fuller, C. S. (2020). Institutions and entrepreneurship: Pushing the boundaries. *Quarterly Journal of Austrian Economics*, *23*(3–4), 568–612.

https://doi.org/10.35297/qjae.010080.

Busenitz, L. W., Gómez, C., & Spencer, J. W. (2000). Country Institutional Profiles: Unlocking Entrepreneurial Phenomena. *Academy of Management Journal*, *43*(5), 994–1003. https://doi.org/10.5465/1556423.

Carree, M., Van Stel, A., Thurik, R., & Wennekers, S. (2002). Economic development and business ownership: An analysis using data of 23 OECD countries in the period 1976-1996. *Small Business Economics*, *19*(3), 271–290. https://doi.org/10.1023/A:1019604426387.

Chowdhury, F., Audretsch, D. B., & Belitski, M. (2019). Institutions and Entrepreneurship Quality. *Entrepreneurship: Theory and Practice*, *43*(1), 51–81. https://doi.org/10.1177/1042258718780431.

Cullen, J. B., Johnson, J. L., & Parboteeah, K. P. (2014). National Rates of Opportunity Entrepreneurship Activity: Insights From Institutional Anomie Theory. *Entrepreneurship: Theory and Practice*, *38*(4), 775–806. https://doi.org/10.1111/etap.12018.

David, P. A. (1994). Why are institutions the "carriers of history"?: Path dependence and the evolution of conventions, organizations and institutions. *Structural Change and Economic Dynamics*, *5*(2), 205–220. https://doi.org/10.1016/0954-349X(94)90002-7.

De Clercq, D., Danis, W. M., & Dakhli, M. (2010). The moderating effect of institutional context on the relationship between associational activity and new business activity in emerging economies. *International Business Review*, *19*(1), 85–101. https://doi.org/10.1016/j.ibusrev.2009.09.002.

Díez-Martín, F., Blanco-González, A., & Prado-Román, C. (2016). Explaining nation-wide differences in entrepreneurial activity: a legitimacy perspective. *International Entrepreneurship and Management Journal*, *12*(4), 1079–1102. https://doi.org/10.1007/s11365-015-0381-4.

Dilli, S., Elert, N., & Herrmann, A. M. (2018). *Varieties of entrepreneurship : exploring the institutional foundations of different entrepreneurship types through ' Varieties-of-Capitalism ' arguments*. 293–320.

DiMaggio, P.J. & Powell, W.W. (1991). Introduction. In W.W. Powell & P.J. DiMaggio (Eds.), The new institutionalism in organizational analysis (pp. 1–38). Chicago: University of Chicago Press.

Durlauf, S. N. (2001). *Manifesto for a growth econometrics*. *100*, 65–69.

Elert, N., & Henrekson, M. (2021). Entrepreneurship prompts institutional change in developing economies. *Review of Austrian Economics*, *34*(1), 33–53. https://doi.org/10.1007/s11138-020-00501-0.

Erken, H., Donselaar, P., & Thurik, R. (2016). Total factor productivity and the role of entrepreneurship. *Journal of Technology Transfer*, *43*(6), 1493–1521. https://doi.org/10.1007/s10961-016-9504-5.

Estrin, S. & Mickiewicz, T. (2011). Entrepreneurship in transition economies: The role of institutions and generational change. The dynamics of entrepreneurship: Evidence from the global entrepreneurship monitor data (pp. 181–208). Oxford: Oxford University Press.

Fredström, A., Peltonen, J., & Wincent, J. (2020). A country-level institutional perspective on entrepreneurship productivity: The effects of informal economy and regulation. *Journal of Business Venturing*, *December 2018*, 106002. https://doi.org/10.1016/j.jbusvent.2020.106002.

Fuentelsaz, L., González, C., & Maicas, J. P. (2019). Formal institutions and opportunity entrepreneurship. The contingent role of informal institutions. *BRQ Business Research Quarterly*, *22*(1), 5–24. https://doi.org/10.1016/j.brq.2018.06.002.

Fuentelsaz, L., Maicas, J. P., & Montero, J. (2018). Entrepreneurs and innovation: The contingent role of institutional factors. *International Small Business Journal: Researching Entrepreneurship*, *36*(6), 686–711. https://doi.org/10.1177/0266242618766235.

Galindo-Martín, M. A., Méndez-Picazo, M. T., & Castaño-Martínez, M. S. (2019). The role of innovation and institutions in entrepreneurship and economic growth in two groups of countries. *International Journal of Entrepreneurial Behaviour and Research*, *26*(3), 485–502. https://doi.org/10.1108/IJEBR-06-2019-0336.

Gartner, W. B. (1985). A conceptual framework for describing the phenomenon of New Venture Creation. *Academy of Management Review*, *10*(4), 696–706. https://doi.org/10.5465/amr.1985.4279094.

Garud, R., Gehman, J., & Giuliani, A. P. (2014). Contextualizing entrepreneurial innovation: A narrative perspective. *Research Policy*, *43*(7), 1177–1188. https://doi.org/10.1016/j.respol.2014.04.015.

GEM (2021, February 6). GEM Global Enterpreneurship Monitor (Web Page). Retrieved from https://www.gemconsortium.org/wiki/1154.

Giotopoulos, I., Kontolaimou, A., & Tsakanikas, A. (2017). Drivers of high-quality entrepreneurship: what changes did the crisis bring about? *Small Business Economics*, *48*(4), 913–930. https://doi.org/10.1007/s11187-016-9814-x.

Glaeser, E. L., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2004). Do institutions cause growth? *Journal of Economic Growth*, *9*(3), 271–303. https://doi.org/10.1023/B:JOEG.0000038933.16398.ed.

Hafer, R. W., & Jones, G. (2014). Are entrepreneurship and cognitive skills related? Some international evidence. *Small Business Economics*, *44*(2), 283–298. https://doi.org/10.1007/s11187-014-9596-y.

Haltiwanger, J., Jarmin, R., Kulick, R., & Miranda, J. (2014). High Growth Young Firms: Contribution to Job Growth, Revenue Growth and Productivity. *Measuring Entrepreneurial Businesses: Current Knowledge and Challenges*, *December*.

Henisz, W. J. (2000). The institutional environment for economic growth. *Economics and Politics*, *12*(1), 1–31. https://doi.org/10.1111/1468-0343.00066.

Herrington, M., & Coduras, A. (2019). The national entrepreneurship framework conditions in sub-Saharan Africa: a comparative study of GEM data/National Expert Surveys for South Africa, Angola, Mozambique and Madagascar. *Journal of Global Entrepreneurship Research*, *9*(1), 1–24. https://doi.org/10.1186/s40497-019-0183-1.

Hofstede, Geert. (1980). Culture's consequences: International differences in work-related values. Beverly Hills, CA: Sage Publications.

Hsiao, C (2003). Analysis of panel Data. Cambridge: Cambridge University Press.

Khursheed, A., Mustafa, F., Fatima, M., & Khalid, F. (2019). Antecedents of Entrepreneurial Intentions: A Cross-Country Study of Northern Europe and the Danube Region. *Iranian Journal of Management Studies*, *12*(4), 593–627. https://doi.org/10.22059/ijms.2019.265108.673301.

Kostova, T. (1997). Country Institutional Profiles: Concept and Measurement. *Academy of Management Proceedings*, *1997*(1), 180–184.

https://doi.org/10.5465/ambpp.1997.4981338.

Levie, J., & Autio, E. (2011). Regulatory Burden, Rule of Law, and Entry of Strategic Entrepreneurs: An International Panel Study. *Journal of Management Studies*, *48*(6), 1392–1419. https://doi.org/10.1111/j.1467-6486.2010.01006.x.

Levie, J., Autio, E., Acs, Z., & Hart, M. (2014). Global entrepreneurship and institutions: An introduction. *Small Business Economics*, *42*(3), 437–444. https://doi.org/10.1007/s11187-013-9516-6.

Li, D., Wei, L. Q., Cao, Q., & Chen, D. (2021). Informal institutions, entrepreneurs' political participation, and venture internationalization. *Journal of International Business Studies*. https://doi.org/10.1057/s41267-021-00402-9.

Liñán, F., Santos, F. J., & Fernández, J. (2011). The influence of perceptions on potential entrepreneurs. *International Entrepreneurship and Management Journal*, *7*(3), 373–390. https://doi.org/10.1007/s11365-011-0199-7.

Manolova, T., Eunni, R., & Gyoshev, B. (2008). Institutional Environments for Entrepreneurship: Evidence from Emerging Economies in Eastern Europe. *Entrepreneurship Theory and Practice*, *1*, 203–218.

McKelvie, A., Brattström, A., & Wennberg, K. (2017). How young firms achieve growth: reconciling the roles of growth motivation and innovative activities. *Small Business Economics*, *49*(2), 273–293. https://doi.org/10.1007/s11187-017-9847-9.

Narver, J. C., Slater, S. F., & MacLachlan, D. L. (2004). Responsive and proactive market orientation and new-product success. *Journal of Product Innovation Management*, *21*(5), 334–347. https://doi.org/10.1111/j.0737-6782.2004.00086.x.

Naudé, W. (2011). Entrepreneurship is not a binding constraint on growth and development in the poorest countries. *World Development*, *39*(1), 33–44. https://doi.org/10.1016/j.worlddev.2010.05.005.

North, D. (1990). Institutions, institutional change and eco- nomic performance. Cambridge: Cambridge University Press.

North, D. C. (1991). Institutions Douglass. *Journal of Economic Perspectiv*, *5*(1), 97–112.

Pinillos, M. J., & Reyes, L. (2009). Relationship between individualist-collectivist culture and entrepreneurial activity: Evidence from Global Entrepreneurship Monitor data. *Small Business Economics*, *37*(1), 23–37. https://doi.org/10.1007/s11187-009-9230-6.

Przeworski, A. (2004). The Last Instance : Are Institutions the Primary Cause of Economic Development ? *European Journal of Sociology*, *45*(2), 165–188.

Porter, M. E. (1990). The competitive advantage of nations. New York: Macmillan.

Rarick, C., & Han, T. (2015). *The role of culture in shaping an entrepreneurial mindset*. International Journal of Entrepreneurship.

Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P., & Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998-2003. *Small Business Economics*, *24*(3), 205–231. https://doi.org/10.1007/s11187-005-1980-1.

Reynolds, P. D., Hay, M., Bygrave, W. D., Camp, S. M., Autio, E., Reynolds, P. D., Hay, M., Bygrave, W. D., & Autio, E. (2000). Global Enterpreneurship Monitor - 2000 Executive Report. In *London Business School*.

Schumpeter, J.A. (1943). Capitalism, socialism and democracy. Allen & Unwin, New York London (first published in the USAin 1942 by Harper and Brothers, New York).

Scott, W. R. (1995). Institutions and organizations (Vol. 2). Thousand Oaks: Sage.

Scott, W. R., Smith, K. G., & Hitt, M. A. (2004). Institutional Theory : Contributing to a Theoretical Research Program Institutional Theory : Contributing to a Theoretical Research Program Chapter prepared for Great Minds in Management : The Process of Theory. *Great Minds in Management: The Process of Theory Development*, *January 2005*, 460–485.

Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, *33*(2), 141–149. https://doi.org/10.1007/s11187-009-9215-5.

Sine, W., & David, R. (2010). Introduction - Insitution and entrepreneurship. In *Insitution and entrepreneurship*.

Sobel, R. S. (2008). Testing Baumol: Institutional quality and the productivity of entrepreneurship. *Journal of Business Venturing*, *23*(6), 641–655. https://doi.org/10.1016/j.jbusvent.2008.01.004.

Speakola (2021, June 6). Carl Sagan: 'Science is more than a body of knowledge. It's a way of thinking', Carl Sagan's last interview – 1996 (Web Page). Retrieved from https://speakola.com/ideas/carl-sagan-science-last-interview-1996.

Stenholm, P., Acs, Z. J., & Wuebker, R. (2013). Exploring country-level institutional arrangements on the rate and type of entrepreneurial activity. *Journal of Business Venturing*, *28*(1), 176–193. https://doi.org/10.1016/j.jbusvent.2011.11.002.

Su, J., Zhai, Q., & Karlsson, T. (2017). Beyond Red Tape and Fools: Institutional Theory in Entrepreneurship Research, 1992–2014. *Entrepreneurship: Theory and Practice*, *41*(4), 505–531. https://doi.org/10.1111/etp.12218.

Su, Z. (2020). The co-evolution of institutions and entrepreneurship. *Asia Pacific Journal of Management*. https://doi.org/10.1007/s10490-019-09703-y.

Terjesen, S., Hessels, J., & Li, D. (2013). Comparative International Entrepreneurship: A Review and Research Agenda. In *Journal of Management* (Vol. 42, Issue 1). https://doi.org/10.1177/0149206313486259.

Tomizawa, A., Zhao, L., Bassellier, G., & Ahlstrom, D. (2020). Economic growth, innovation, institutions, and the Great Enrichment. *Asia Pacific Journal of Management*, *37*(1), 7–31. https://doi.org/10.1007/s10490-019-09648-2.

Urban, B. (2016). Empirical evidence on the influence of the institutional environment on venture innovation performance in South Africa. *Journal of Developmental Entrepreneurship*, *21*(2), 1–14. https://doi.org/10.1142/S1084946716500114.

Urban, B. (2019). The influence of the regulatory, normative and cognitive institutions on entrepreneurial orientation in South Africa. *International Journal of Entrepreneurship and Innovation*, *20*(3), 182–193. https://doi.org/10.1177/1465750318796721.

Urbano, D., & Alvarez, C. (2014). Institutional dimensions and entrepreneurial activity: An international study. *Small Business Economics*, *42*(4), 703–716. https://doi.org/10.1007/s11187-013-9523-7.

Webb, J. W., Khoury, T. A., & Hitt, M. A. (2020). The Influence of Formal and Informal Institutional Voids on Entrepreneurship. *Entrepreneurship: Theory and Practice*, *44*(3), 504–526. https://doi.org/10.1177/1042258719830310.

Williamson, O. E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature*, *38*(3), 595–613. https://doi.org/10.1257/jel.38.3.595.

Wooldridge, J. M. (2000). Econometric analysis of cross section and panel data. Cambridge: MIT press.

World Economic Forum. (2017). Methodology and computation of the Global Competitiveness Index. *Global Competitiveness Index*, 317–324. http://reports.weforum.org/global-competitiveness-index/appendix-a-methodology-and-computation-of-the-global-competitiveness-index-2016-2017/.