

**LINKING INSTITUTIONAL, ECONOMIC, TECHNOLOGICAL AND  
CULTURAL CONTEXT TO ENTREPRENEURSHIP IN REGIONS OF EUROPE**

by

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A Dissertation Submitted to the Faculty of  
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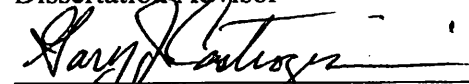
This dissertation was prepared under the candidate's dissertation advisors, Dr. Mark F. Peterson, Department of Management and has been approved by the members of her supervisory committee. It was submitted to the faculty of the College of Business and was accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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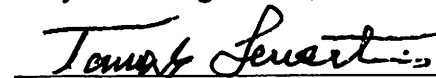


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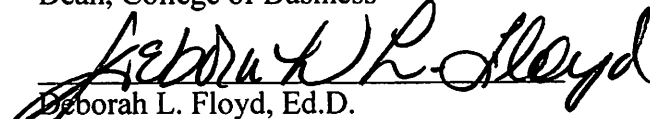
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## ABSTRACT

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Researchers and policy makers consider entrepreneurship to be a major source of economic development and competitiveness. Determinants of entrepreneurship have been studied at individual, regional and national levels. Even though research indicates that variation in the levels of entrepreneurship across regions within nations is greater than the national differences and that these differences persist over time (Bosma & Schutjen 2009, 2011; Fritsch & Mueller 2006; Sternberg 2004; Tamásy 2006), we still do not know the full range of regional level determinants of entrepreneurship. I drew from Wennekers' (2006) framework and link two lines of research (international entrepreneurship and international management) to examine the effects of institutional, economic, technological and cultural contexts on entrepreneurship across within-country regions.

I developed ten hypotheses regarding the relationship of institutional, economic, technological and cultural context to entrepreneurship. I tested these hypotheses within Europe using the regional classification scheme developed by the European Union. Data for the variables came from the European Values Survey, European Social Survey, Eurostat, World Bank, International Social Security Association, Eurobarometer and the Global Competitiveness Report. To test the hypothesized relationships, I use Hierarchical Linear Modeling (HLM 6.0.) The results indicate that there is a positive relationship between institutional trust, Long Term Orientation and entrepreneurship levels across regions. In conclusion, examination of region-level predictors of entrepreneurship must include different measures of entrepreneurship to provide more accurate understanding and to inform policy makers.

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## I. INTRODUCTION

Both researchers and policy-makers have been interested in entrepreneurship mainly, due to the link between entrepreneurship and economic growth (Acs & Audretsch, 2003; Baumol, Litan & Schramm, 2007; Fritsch & Storey, 2014; Schumpeter, 1934). According to Schumpeter (1934), innovation in products and processes, that are crucial to national economic growth and advancement, are driven by entrepreneurs. Porter supports the link proposed by Schumpeter by arguing that entrepreneurs are the driving force behind national economic advantage. Empirical results in a variety of disciplines indicate that the link between entrepreneurship (entrepreneurial attitudes and activities) and economic growth is statistically robust at the industry, region and country levels (Audretsch, Thurik, Verheul & Wennekers, 2002; Fritsch & Storey, 2014; Van Praag & Versloot, 2007).

International entrepreneurship (IE) research examines the determinants of entrepreneurship at the micro and macro levels (Jones, Coviello & Tang, 2011; Hayton, George & Zahra, 2002). At micro level, a variety of topics, such as networks, network relationships, capability of a firm/founder to network, influence of networks on entrepreneurship, financing, perceptions, cognition, ethics, need for achievement, need for affiliation, risk taking, gender and other demographic characteristics of the entrepreneur (Freitag & Thurik, 2007; Jones et al., 2011) have received attention. Studies examined the effects of culture by focusing on the differences in individual or firm

characteristics across countries or across cultures (Blanchflower, 2004; Grilo & Thurik, 2005a, 2005b, 2005c; Parker, 2004).

Macro level IE studies examine the difference in the levels of entrepreneurship across countries and focus on the link between a variety of environmental factors including institutional, economic, technological and cultural contexts (Verheul, Wennekers, Audretsch & Thurik, 2002; Audretsch et al., 2002; Wennekers, Uhlaner & Thurik, 2002; Wennekers, 2006). Research indicates that the differences in institutional context (Busenitz, Gomez & Spencer, 2000), social security system (Hessels, Gelderen & Thurik, 2008a, 2008b), level of economic development (Wennekers, van Stel, Thurik & Reynolds, 2005) and unemployment explain the differences in entrepreneurship levels across countries (Jones et al., 2011). Even though much of the macro IE research has focused on economic factors, recent efforts have been undertaken to understand the effects of culture on entrepreneurship (e.g. Busenitz, et al., 2000; Lee & Petersen, 2000; Mueller & Thomas, 2000; Stephan & Uhlaner, 2010; Uhlaner & Thurik, 2004; Wennekers, Noorderhaven, Hofstede & Thurik, 2001).

Macro level research is not limited to country level analysis. Sternberg (2009, 2011) argues that entrepreneurship is a regional phenomenon since entrepreneurs start their ventures in the region where they live, work or were born. The resources on which potential entrepreneurs rely, such as former colleagues, bosses, customers, banks and chambers of commerce, are located in the same region. In addition, the way that potential entrepreneurs perceive the world is shaped by the region in which they live. Empirical studies have supported the notion that entrepreneurship is a regional phenomenon and documented regional variations in entrepreneurship and economic growth levels both in



the European Union and USA. Researchers have examined entrepreneurship and economic growth in regions of specific European countries. For example, Westhead and Moyes (1992) and Keeble, Walker and Robson (1993) focused on Britain, Fritsch (1993) focused on Germany, Garofoli (1992) focused on Italy and Davidsson, Lindmark and Olofsson (1994) focused on Sweden. These studies show a strong association between the structural characteristics of a region and new firm formation rates. The Regional Entrepreneurship Monitor (REM) as well as the Interdisciplinary Entrepreneurship Research (DFG) group were established to examine the antecedents and consequences of differences in regional entrepreneurship levels and types in Germany (Sternberg, 2011; Wagner, 2005). The Uddevalla Symposium in 2003 and 2005, a special issue of *Regional Studies* in 2004 and the *Zeitschrift Für Wirtschaftsgeographie* in 2005 gathered scholarly efforts to understand the relationship between region (sub-nation) and entrepreneurship (Sternberg, 2009).

Entrepreneurship research that focusses on the regional level has not gained much attention in the US context. Aside from the link between entrepreneurship levels and access to capital and human capital of the entrepreneur, determinants of entrepreneurship levels at regional (or state) level is not well researched (Goetz & Freshwater, 2001; Heriot & Campbell, 2006; Gupta & York, 2008; Van der Vlist, Gerking & Folmer, 2004). Similarly, the efforts of US policy makers are very fragmented and collaboration across agencies is lacking (Mills, Reynolds & Reamer, 2008); few policies are put in place to bring entrepreneurship to the forefront for economic development. For example, in the United States, the Appalachian Regional Commission (ARC) has invested \$43 million since 1997 to create entrepreneurial ventures (Goetz, Partridge, Deller & Fleming, 2010).

The United States Department of Agriculture/Rural Development (USDA/RD) budgeted for infrastructure improvements to encourage entrepreneurial ventures. The US Small Business Administration (SBA) offers help for starting or managing a business as well as securing loans and grants.

To foster entrepreneurship, the efforts of policy makers in the EU have been more unified. The European Union has designated regional entrepreneurship as the primary tool for economic growth and competitiveness (Bosma & Schutjens, 2007). The European Union's policies focus on both entrepreneurship research as well as development of entrepreneurial ventures. For example, the European Commission's Enterprise and Industry Department has been gathering information on the development of entrepreneurship in the EU. The Directorate-General administers Eurobarometer Survey on Entrepreneurships to understand the entrepreneurial mindset and problems of potential entrepreneurs and also to help policy makers develop responses. Country reports and annual reports based on Eurobarometer data are published on the European Commission's website (<http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/eurobarometer/>). In 2004, in light of the data gathered, the Commission highlighted the needed steps for (1) fuelling entrepreneurial mindsets, (2) encouraging more people to become entrepreneurs, (3) gearing entrepreneurs for growth and competitiveness, (4) improving the flow of finance and (5) creating a more small and medium size enterprise(SME)-friendly regulatory and administrative framework (The European Commission, 2004: 6).

The European Union provides funding to encourage entrepreneurs as well. For example, the EU provides funds for young entrepreneurs who want to spend time

learning from another experienced entrepreneur (Exchanges for young entrepreneurs, 2013). The EU supports micro finance programs for self-employed people and small businesses through the Competitiveness and Innovation Framework Program, Joint European Resources and EU structural funds (The European Commission, 2013a, 2014a). In addition, the European Investment Fund is another UE agency that aims to fund entrepreneurship and innovation in the EU (The European Investment Fund, 2013).

The EU relies on research to make funding decisions. Thus, it has become critical for researchers who wish to influence EU policy to understand regional variations in entrepreneurship levels as well as regional determinants of entrepreneurship (Fritsch & Mueller 2006; Fritsch, 2011). Even though policy makers and researchers emphasize the importance of regions, entrepreneurship research at the regional level lags behind national-level research especially when it comes to the effects of context and culture. We know that variation in the levels of entrepreneurship across regions is greater than national differences (Bosma & Schutjens 2011; Sternberg 2004; Fritsch & Mueller 2006; Tamásy 2006; Bosma & Schutjens 2009) and that these differences persist over time (Sternberg, 2009, 2011).

Regional demography, economic attributes and institutional characteristics affect regional differences in entrepreneurial attitudes and both the type and level of entrepreneurial activities (Bosma & Schutjens, 2011). But research points out the need to know more about the effects of institutional, technological and cultural factors on entrepreneurship. For example, Bosma and Schutjens (2011) suggested that macro level international entrepreneurship research could benefit from a regional approach to Hofstede's measures of national cultural values. As an example of institutional and

technological factors, research about geographic industry clusters deals with a broader range of business entities than just entrepreneurs, but also recognizes within-country variability in types of business activities (Cortright, 2006). Even though the industry cluster literature (which assumes that various economic players will benefit from the geographic proximity to each other (Cortright, 2006)) is conceptually related to entrepreneurship, there is a disconnect between industry cluster and regional entrepreneurship research. The industry cluster literature is not concerned with the characteristics of business owners and cultural values that are central to entrepreneurship research. In my dissertation, I am not attempting to connect the two literatures, mainly because the focus in industry cluster research is on smaller geographical areas than those that are the dissertation's focus.

My dissertation is designed to contribute to literature which suggests that within-country region is a useful supplement to or perhaps even a replacement for country to understand the factors affecting entrepreneurship (Sternberg, 2009; Sternberg, 2011; Stam, 2009; Sternberg & Rocha, 2007). In my dissertation, I seek to address the gaps in the international entrepreneurship (IE) literature by modeling the region-level relationship of institutional, economic, technological and cultural contexts to entrepreneurship. A major contribution of the study to the IE literature is that it argues that the institutional, economic, technological and cultural contexts of within-country regions predict levels of entrepreneurship. I adapted Wennekers' (2006) macro level framework which has precisely specified relevant aspects of context, but has only been used to predict levels of entrepreneurship at the country level and not at the within-country region level. More specifically, I linked two lines of research: (1) international

entrepreneurship which includes economic explanations and institutional differences as determinants of entrepreneurship at the regional level and (2) international management which examines the role of cultural characteristics. I used these literatures to find variables to represent context at the regional level. In studying the effects of culture, I also intend to contribute to the international management literature. I used two sets of measures that have been designed to represent country culture dimensions. These are dimensions based on Hofstede's model that are constructed using the European Social Survey (ESS) and European Values Survey (EVS) (Kaasa, Vadi & Varblane, 2014) and a relatively new set of culture dimensions developed by Minkov (2011) based on the World Values Survey (WVS). I seek to derive theoretically and methodologically sound cultural dimension scores at the regional level. I focused on the regions of Europe to increase the understanding of determinants of *regional entrepreneurship levels*, which has been designated as the tool for economic development and prosperity. Several reasons make examination of regional entrepreneurship in the European context interesting. First, country-level frameworks have been tested in the European context that can be extended to the within-country region level and researchers have focused far more on the European regions than on regions of countries elsewhere in the world. Second, EU policies are designed to encourage both research in entrepreneurship and entrepreneurial ventures at the region level. Policy makers have designated regional entrepreneurship levels as the main ingredient for economic development; this designation applies to all 28 European Union member countries and five candidate countries. Third, extensive region-level data have been collected by the EU and researchers.

## **Research Questions**

The general research question I address in this dissertation is:

*What is the relationship between contextual factors and the levels of entrepreneurship across within-country regions?*

The specific research questions related to my general research question are:

1. What is the link between widely shared perceptions of institutions (institutional trust) and level of entrepreneurship across regions?
2. Can the average level of education across regions affect levels of entrepreneurship?
3. How does the regional economic context, especially the level of economic development and unemployment, affect entrepreneurship?
4. What is the relationship between regional technological context and entrepreneurship?
5. What is the link of regional cultural dimensions of individualism-collectivism, exclusionism versus universalism, uncertainty avoidance, long-term orientation and indulgence versus restraint to entrepreneurship?

## **Focus on Europe**

The focus of my dissertation is on Europe. As I have indicated in section 1.1, aside from researchers that tie levels of entrepreneurship to levels of economic growth, the European Commission focuses on policies that increase entrepreneurship levels to increase economic development (The European Commission, 2004: 6). The EU's conscious efforts to promote both entrepreneurship research as well as entrepreneurial

ventures make Europe an interesting context for studying determinants of within-country entrepreneurship levels.

The interest of the EU in promoting entrepreneurship traces back through the history that the EU has in promoting joint economic development. Dating back to the roots of the EU in the establishment of the European Economic Community (EEC) in 1958, the purpose of the EEC was to increase economic cooperation between six European countries. The EEC name was changed to the European Union (EU) in 1993 (The European Union, 2013b). Today, the EU consists of 28 member countries and focuses on the economic and political partnership among member countries. Several institutions such as the European Parliament, the European Council, the Council of the European Union, the European Commission, the Court of Justice of the European Union, the European Court of Auditors and the European Central Bank promote free movement of people, goods, services and capital (The European Union, 2013). For example, the European Commission and other EU agencies work to harmonize trademarks and designs and rules governing European securities and markets. Moreover, member countries adhere to the legislation that governs justice and home affairs in order to maintain common policies on trade.

Part of the challenge that the EU has faced has been to promote development in the more slowly developing countries and within-country regions of the member states. In order to meet this challenge, over the last decade, both EU policy makers and researchers have tried to understand the determinants of entrepreneurship at the regional level. This sort of understanding is necessary for EU policy makers to decide where and how to allocate funds to promote entrepreneurship and economic growth. To make policy

decisions, the EU relies on multi-country surveys (e.g. Eurobarometer Survey on Entrepreneurship) administered by the European Commission's Directorate-General "Enterprise and Industry Department" and data collected by the National Statistical Institutes of the member countries.

The Eurobarometer Survey on Entrepreneurship has been conducted since 2000. This survey is used to better understand the existing obstacles that prevent people from pursuing entrepreneurship and to promote a culture that embraces entrepreneurship (The European Commission, 2013c). European policymakers also rely on data collected by the National Statistical Institutes of the member countries to make administrative decisions. The European Statistical Office, Eurostat, coordinates efforts of the National Statistical Institutes of the member countries and ensures the quality and comparability of the data collected.

Both policy makers and researchers have used region as the level of analysis. International management and cross-cultural psychology researchers have identified within-country cultural differences in Brazil (Hofstede, Garibaldi de Hilal, Malvezzi, Tanure & Vinken, 2010a), USA (Kluckhohn & Strodtbeck, 1961) and in Italy (Casellas & Galley, 1999). Researchers have also used culturally homogeneous regions to note differences in managing work organizations (Peterson & Fanimokun, 2008), use of e-commerce (Gironde & Peterson, 2014) and work goals (Peterson & van Iterson, 2014). However, the definition of region is problematic when it comes to Europe (Casellas & Galley, 1999; Cole & Cole, 1993; Labasse, 1991, 1994; Van Hove & Klaassen, 1987). In some countries administrative regions and regions created for statistical purposes do not overlap. In addition, there might be several administrative regions within a country. Long



before the EU was created, administrative regions have been used by countries to organize institutions, such as the police, courts and education, to serve the public good. Such regions are often likely to have some cultural significance, but they have also often been created for many political reasons that are at most only partially based on cultural homogeneity. Regional differences in institutions and policies could exist. As an example within the EU, Vaona (2008) focused on the administrative regions of Italy to examine the relationship between financial development and economic growth.

Aside from administrative regions that exist in each country, the EU introduced the Nomenclature of Territorial Units for Statistics (NUTS) classification system to keep statistics, conduct socioeconomic analysis and frame regional policies. Even though it has been over 30 years since the introduction of the NUTS classification, it was not until 2003 that a unified way to classify subnational regions was adopted (The European commission. 2013d). The territorial units divide each country into regions at three different levels (NUTS1, NUTS2 and NUTS3); NUTS 1 is the largest unit under the nation level and the others are successively smaller geographical units. The NUTS classification system is used to collect, develop and harmonize EU regional statistics, conduct socio-economic analysis of the regions and frame EU regional policies. The EU relies of the European Statistical System Committee, which consists of representatives from Eurostat and the national statistical institutes to establish comparable and relevant information on a variety of issues. The European Statistical System Committee establishes the European Statistics Code of Practice and decides on issues related to the production of comparable, reliable, relevant and usable statistics. For example, to ensure the quality of the data collected, the European Statistics Code of Practice provides 15 key

principles for the national and community statistical authorities for production and distribution of official statistics. The national statistical institutes must follow the Code which outlines the following: professional independence, mandate for data collection, adequacy of resources, commitment to quality, statistical confidentiality, impartiality and objectivity, sound methodology, appropriate statistical procedures, non-excessive burden on respondents, cost effectiveness, relevance, accuracy and reliability, timeliness and punctuality, coherence and comparability and accessibility and clarity (Eurostat, 2013). The data collected by Eurostat and results of surveys conducted by the EU Commission allow the Commission to come up with policies for a variety of issues including economic development and entrepreneurship. Even though the Commission uses NUTS regional, the devised policies are administered by the regional governing body of the member countries.

Although the EU has determined how to define regions to conduct socio-economic analysis of the regions, frame EU regional policies and conduct statistical analyses, the administrative structure of member countries differs (Europa, 2008). In some member countries, such as in Germany and the UK, NUTS1 reflects the highest level of official administrative divisions beneath the level of country. Germany consists of 16 *Länder* and the United Kingdom regions consist of Scotland, Wales, Northern Ireland and the Government Office Regions of England. On the other hand, administrative divisions in Belgium, Greece, Spain, France, Italy, Austria and Netherlands reflect NUTS2 classification. *Provincies* in Belgium, *Periferies* in Greece, *Comundidades y ciudades autonomas* in Spain, *Régions* in France, *Regioni* in Italy, *Provincies* in the Netherlands and *Länder* in Austria are used. In addition, some countries have official administrative

division at NUTS2 and NUTS 3 classifications and others do not have administrative bodies for NUTS1 classification. For example, Germany's administrative divisions include Länder (NUTS1), Regierungsbezirke (NUTS2) and Kreise/kreisfreie Städte (NUTS3). Greece, France, Italy and Netherlands have administrative regions at NUTS 2 or NUTS3 classifications but NUTS1 classification is created by the EU for statistical purposes. Similarly, Austria does not have administrative units corresponding to NUTS1 or NUTS3 classifications.

Consequently, research examining the determinants of levels of entrepreneurship must either choose an appropriate classification or carefully consider the nature of NUTS classifications and administrative divisions in different countries to create a composite of the most relevant regional level in different countries. Researchers have been using a combination of NUTS1, NUTS2 and NUTS3 regions without detailing the reason for their choice of a certain classification. For example, Pippa, Oguz and Knight (2009) used variables such as gross median weekly pay of full-time employees, business expenditure on R&D, enterprise births and deaths and value of total export goods to examine rural and urban productivity in 12 (NUTS1) regions of the United Kingdom. Van Oort and Bosma (2013) examined the impact of human capital, innovation and several types of entrepreneurship on regional economic performance across regions; NUTS1, 2 and 3 classifications were included. Similarly, Charron, Lapuente and Dijkstra (2012) examined the regional variation in quality of governance across 172 NUTS1 and NUTS2 regions. Kaasa and Vadi (2010) also included NUTS1 and NUTS2 classifications to examine the relationship between culture and innovation.

The common strategy adopted in IE research that focuses on within-nation variation in entrepreneurship levels considers the unique nature of NUTS regions in each country; studies include Germany and England at the NUTS1 level and other countries are included at the NUTS2 level. Observing this common IE strategy, I also adopt the common IM strategy of including culturally meaningful regions. These culturally meaningful regions cannot be represented by *ad hoc* classifications, but should be represented by enduring administrative regions. In addition, administrative bodies play an important role in disbursement of funding aimed at increasing entrepreneurship levels in specific regions. Policies that are designed to increase entrepreneurial ventures across a specific (e.g. NUTS1) region might not attain the desired result if a member country does not have an administrative body that will implement the policies and measure the outcomes. For example, NUT2 regions of Austria and Slovakia are eligible to receive structural funding. Even though there are administrative bodies (Provinces) in Austria to distribute the funding, in Slovakia there is no administrative body at the NUTS2 level. A growing body of literature examines the Commission's decision to allocate structural funds as well as the effects of partisan politics on fund allocation in each member nation (e.g. Bodenstein & Kemmerling 2008; Bouvet & Dall'erba 2010; John, Ward & Dowding, 2004; Kemmerling & Bodenstein 2006; Thomson 2008; Wonka 2007). The literature indicates that the regional administrative bodies work with the national government and the EU Commission to design projects and acquire funding to support economic growth and prosperity (Dellmuth, 2011). To examine the effects of environmental factors (technological, economic, institutional and cultural factors) on entrepreneurship levels across within-nation regions, I have included only those countries that have sub-national

administrative bodies that can distribute the EU funding received. In addition, in order to clearly distinguish nation from within-nation effects, as detailed in the methods section, I will only consider countries that have at least seven within-nation NUTS regions.

Aside from funding distribution, administrative regions influence variables that affect entrepreneurship levels. For example, education is one of the variables that has been shown to affect entrepreneurship levels. Policies that shape education are designed by the administrative regions in Germany (Länder, which correspond to the NUTS1 classification) (Institutions, Examinations, Qualifications, Titles and other Specialist Terms, 2010) not by the federal government. Thus when examining determinants of entrepreneurship, considering administrative regions and funding eligibility to determine level of analysis is crucial for researchers as well as policy-makers. Table 1 details the NUTS and administrative region classification of countries with more than seven administrative regions.

**Table 1. Configuration of NUTS Regions**

<b>Country</b>	<b>Number of NUTS1 regions</b>	<b>Number of NUTS2 regions</b>	<b>Number of NUTS3 regions</b>	<b>Administrative Regions</b>
Austria	3	9 <sup>a</sup>	35	9 states-NUTS2 11(10 provinces + Brussels)-NUTS2
Belgium	3	11 <sup>a</sup>	44	26 (regions + DOM)-NUTS2
France	9	26 <sup>a</sup>	100	16 states-NUTS1
Germany	16 <sup>a</sup>	41	400	13 regions-NUTS2
Greece	4	13 <sup>a</sup>	51	21regions-NUTS2
Italy	5	21 <sup>a</sup>	110	12 provinces-NUTS2
Netherlands	4	12 <sup>a</sup>	40	16 Voivodeships-NUTS2
Poland	6	16 <sup>a</sup>	66	8 regions-NUTS2
Romania	4	8 <sup>a</sup>	42	19 (17 Autonomous communities & 2 autonomous cities )-NUTS2
Spain	7	19 <sup>a</sup>	59	

UK	12 <sup>a</sup>	37	139	12-NUTS1
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<sup>a</sup> NUTS level at which the funding eligibility

Eurostat compiles data on a variety of issues across Europe (covering both the member and the candidate countries). Economy, population, health, education, labor market, structural business statistics and information society are some of the topics for which data is collected at both the national and regional (NUTS 1, 2 and 3) levels. Several issues covered in my dissertation are affected by the unification efforts of the European Union. For example, GDP, level of education, unemployment and R&D investment figures are collected at both the national and regional levels. On the other hand, issues such as social security, tax rates and regulatory complexity still show differences only at the national level. For example, even though steps have been taken to unify laws across the European countries, laws with regard to social security lack unity. With free circulation of workers within the EU, aligning the contribution of employees, employers and the governments is still problematic for the Council of Europe (Laborde, 2005; Paskalia, 2009). In addition, data collected by the national statistical institutes of the candidate countries do not have to adhere to the rules outlined by the European Statistical System Committee. Researchers must take care when deciding which factors to include as well as the level of analysis.

### **Study Methodology**

In my dissertation, I follow macro level research (such as Hofstede, Noorderhaven, Thurik, Uhlaner, Wennekers & Wildeman, 2004; Stephan & Uhlaner, 2010; Wennekers et al., 2002, Wennekers, 2006) and measure entrepreneurship as the percentage of a

region's workforce that is self-employed (Hofstede et al., 2004; Wennekers et al., 2002, Wennekers, 2006). Self-employed individuals and business owners can exhibit different levels of entrepreneurial behaviors or engage in different entrepreneurial processes (discovery, evaluation and exploitation). For example, someone might become a business owner by inheriting the business, which might not require him/her to engage in discovery or evaluation. On the other hand, someone might become self-employed by buying or starting a business and immediately engage in evaluating and exploiting existing opportunities (e.g. introduce a new product to an existing market). Here, my intent is neither to differentiate between the levels of entrepreneurial behavior of self-employed individuals nor to examine the type of entrepreneurship, but to examine the determinants of the differences in the levels of self-employment (using an aggregate measure of entrepreneurship) across within-country regions.

I used data from the EVS, ESS, Eurostat, Global Competitiveness Report (GCR), International Social Security Association (IASSA) and the World Bank. More specifically, I used data from the EVS and ESS to construct value dimensions and institutional trust at the regional level. I used data from Eurostat for economic and technological variables such as GDP per capita, patent applications, R&D expenditure, internet access and unemployment at the regional level. I used data from the GCR for intellectual property protection. I used data from the ISSA to measure social security contributions in each nation and the World Bank's report on regulatory complexity.

Because some variables are only meaningful at the country rather than the within-country region level (e.g. social security contributions), I analyzed the hypothesized region-level relationships by controlling for the effects of country-level variables. I used

HLM (6.0) to test my hypotheses at the regional level while controlling for country-level characteristics.

### **Organization of the Dissertation**

In Chapter Two, I will present a model that I will use to organize a review of the literatures on international entrepreneurship, national culture and regional culture and develop hypotheses. Literature on international entrepreneurship examines the determinants of entrepreneurship both at the micro and macro levels. Macro level studies focus on the contextual factors. The literature review indicates that even though macro level frameworks are available, a testable framework at the region level is missing. In addition, the effects of culture on entrepreneurship at the region level have yet to receive attention. The literature on national and regional culture focuses mostly on either the effects of national culture on a variety of organizational phenomena or on the identification of national cultural dimensions. A limited number of studies that use regional cultural values point to the fact that within-country regional analysis would be useful.

In light of the literature review, I will develop hypotheses for the link between institutional, economic, technological, cultural contexts and entrepreneurship in Chapter Three. In Chapter Four, I will comment on data sources and construct measures at regional level. In Chapter Five, I will present the results of my analyses. Key findings, theoretical contributions to the international entrepreneurship line of research, practical implications for policy makers and suggestions for future research will be covered in Chapter Six.



## **II. LITERATURE REVIEW**

In this chapter, I first define entrepreneurship. Researchers from a variety of disciplines such as management, finance, psychology, sociology, economics, political science and geography, contribute to the IE literature. Attention from a variety of disciplines brings both richness and fragmentation. The definitions and measures used, antecedents studied and level of analyses observed vary greatly. I discuss the different predictors for the different definitions and measures used.

Next, I will introduce the macro-level frameworks that have been used to date. Jones et al. (2011) identified 78 studies that focus on cross-country or cross-cultural IE research. However, only a handful of frameworks are present that depict a macro level relationship. Macro-level IE studies that examine the difference in the level or type of entrepreneurship across nations or within-country regions focus on a variety of environmental factors or aggregate psychological characteristics. I will review these frameworks briefly and offer a framework to study the determinants of entrepreneurship at the within-country regional level.

### **Definitions and Measures of Entrepreneurship**

Many entrepreneurship articles start by stating that many definitions for entrepreneur and entrepreneurship have been proposed but there is currently no agreed upon definition of entrepreneurship (Hayton et al., 2002; Jones et al., 2011; Wennekers,

2006). Low (2009) and Wennekers (2006) provided several different ways entrepreneurship has been defined. Low (2009) indicated that Cantillon, Von Thunen, Say, Schumpeter, Knight, Kirzner, Schutz and Casson were the most referenced scholars when defining entrepreneurship. Low (2009) and Wennekers (2006) state that the definition of entrepreneurship differs according to the level and discipline of study.

Micro level IE researchers interested in uncovering the differences in behavior and perception of entrepreneurs across nations use a definition of entrepreneurship that focuses on the behavioral characteristic of persons. For example, Baumol (1968: 64-65) defined an entrepreneur as someone whose job it is "to locate new ideas and to put them into effect" and Reynolds, Hay and Camp (1999: 3) defined it as "Any attempt at new business or new venture creation, such as self-employment, a new business organization or the expansion of an existing business, by an individual, a team of individuals or an established business." Hébert and Link (1989: 47) defined it as "someone who specializes in taking responsibility for and making judgmental decisions that affect the location, form and the use of goods, resources or institutions." Studies that focus on opportunity recognition and organization of efforts use a variety of characteristics as predictors; Bygrave and Hofer (1991: 14) defined an entrepreneur as ". . . someone who perceives an opportunity and creates an organization to pursue it." The need for achievement, locus of control, Protestant work ethic, intrinsic work motivation (Green, David, Dent & Tyshkovsky, 1996), innovativeness, entrepreneurial orientation (Mueller & Thomas, 2000) and entrepreneurial attitudes have received attention as characteristics of entrepreneurs. Surveys have been utilized to measure a variety of

characteristics; for example, Thomas and Mueller (2000) used a modified version of the Rotter's I-E scale to measure locus of control of entrepreneurs.

Macro level IE studies focus on the difference between countries in the levels of entrepreneurship and determinants of entrepreneurship. Depending on how entrepreneurship is operationalized, different definitions have been provided and different measures have been used to proxy for entrepreneurship. Self-employment, new-venture creation, corporate-venturing, managing a small business, listing a new business on a national stock exchange (Spencer & Gomez, 2004), Total Entrepreneurial Activity (TEA), established business ownership rate, independent new business ownership rate and innovative new business ownership rate (Stephan & Uhlaner, 2010) are some of the ways entrepreneurship has been measured. For example, self-employment is one of the most utilized measures of entrepreneurship because of its availability. Country-level studies (Blanchflower, 2004; Iversen, Rasnussen & Makchow-Moller, 2008; Parker, 2005), region-level studies (Acs, Desai & Hessels, 2008; Glaeser, 2007; Parker, 1996) and longitudinal and panel studies (Lazear, 2005; Reynolds & Curtin, 2008; Tamásy, 2006) use self-employment as a measure of entrepreneurship (Low, 2009). For example, Hofstede et al. (2004), Wildeman, Hofstede, Noorderhaven, Thurik, Verhoeven and Wennekers (1998), and Wennekers et al. (2001) used the percentage of a country's workforce that is self-employed. Beugelsdijk (2007) used the measure of self-employed at the regional level. When self-employment is used as a proxy for entrepreneurship, secondary data is utilized and environmental factors are used as determinants of entrepreneurship.

The percentage of small firms in a country has also been used as a proxy for entrepreneurship (e.g. Acs (1992), Aronson (1991) and Spencer and Gomez (2004)). For example, Spencer and Gomez (2004) used institutional profile (normative, regulatory and cognitive institutions), GDP and unemployment as the determinants of entrepreneurship (measured as self-employment, prevalence of small firms and listings on a country's stock exchange).

The Global Entrepreneurship Monitor (GEM) uses in-depth interviews (about participation in entrepreneurial activities) with key informants in each participating country and construct a variety of entrepreneurship measures: TEA, established business ownership rate, independent new business ownership rate, innovative new business ownership rate, necessity-based entrepreneurship rates, opportunity-based entrepreneurship and high-potential total entrepreneurship activity (Acs & Amoros, 2008; Acs & Szerb, 2008; Reynolds, Bosma, Autio, Hunt, De Bono, Servais, Lopez-Garcia & Chin, 2005; Reynolds, Hay & Camp, 1999; Wong, Ho & Autio, 2005). Researchers who use the GEM's measures of entrepreneurship use the Entrepreneurial Framework Conditions (which I will explain in the next section), institutional context and culture (Reynolds, Camp, Bygrave, Autio & Hay, 2001; Reynolds et al., 2005) to predict entrepreneurship levels across nations.

To date, a variety of entrepreneurship definitions and measures have been used. Micro-level studies draw from definitions that focus on traits of entrepreneurs or functions of entrepreneurs. Macro-level studies focus more on operationalization and draw from economics, psychology and sociology to examine determinants. Macro-level

frameworks use personality/traits, institutions, culture and economic variables (e.g. GDP, unemployment) as determinants of entrepreneurship.

### **Macro Level Frameworks: Determinants of Entrepreneurship at the Aggregate Level**

The Global Entrepreneurship Monitor (GEM) consortium led by Reynolds was one of the earliest efforts to examine the determinants of entrepreneurship (Reynolds et al., 1999). The GEM consortium produces a global report and country reports every year (e.g. Kelley, Singer & Herrington, 2011) since 1999.

The GEM framework proposes a link between social, cultural and political context and two sets of conditions: (1) general national framework conditions and (2) entrepreneurial framework conditions. The entrepreneurial capacity and entrepreneurial opportunities of nations are affected by these conditions which include: the role of government and financial institutions, levels of research and development (R&D), the quality of the physical infrastructure, labor market efficiency and the robustness of legal and social institutions, the availability of financial resources for new firms, government policies and programs designed to support start-ups, education and training for entrepreneurship, effectiveness of technology transfer mechanisms and access to professional support services such as lawyers and accountants (Reynolds et al. 1999: 12).

In addition to the reports that the GEM consortium provides, researchers use public data from the GEM dataset to increase our understanding of entrepreneurship (e.g., Bergmann & Sternberg, 2007; Fotopoulos & Spence, 1999; Rocha & Sternberg, 2005; Vaillant & Lafuente, 2007) and economic growth (e.g. Wong, Ho & Autio, 2005). For

example, Stephan and Uhlaner (2010) examined the relationship between culture and entrepreneurship using the GLOBE's higher-order cultural dimensions and the GEM model.

Baker, Gedajlovic and Lubatkin (2005) offered a framework that details effects of institutional and cultural context. The authors argued that current conceptualizations of comparative IE research lack environmental antecedents of entrepreneurship such as a nation's institutional and cultural structures. The authors argued that institutional and cultural structures vary across nations and such differences affect entrepreneurial processes such as the discovery, evaluation and exploitation of entrepreneurial opportunities as well as the level/type of entrepreneurship. Using sociology, IO economics, organizational ecology and economic geography theories, Baker et al. (2005) explained how IE researchers can theorize and explain the national differences in discovery, evaluation and exploitation. However, to contextualize entrepreneurship is challenging (Welter, 2010). The context is multi-level and includes both temporal and situational boundaries. When and where one is conceptualizing entrepreneurship is important. Historical influences such as new government or deficient regulations can affect conceptualization (Welter, 2010). The social-level could be theorized as business, community, region and nation levels. For example, Hopp and Stephan's (2012) results indicated that institutional and cultural structures at the community-level do affect entrepreneurial self-efficacy and entrepreneurial motivation. Even though contextualizing entrepreneurship as suggested by Baker et al. (2005) requires detailing the context, it is a step in the right direction.

Sternberg's (2009, 2011) framework included micro, meso and macro environmental conditions. He argued that the entrepreneurship literature ignores spatial variables while the regional science and economic geography literatures ignore entrepreneurship. Combining these literatures, Sternberg (2009, 2011) acknowledged that determinants of entrepreneurship include personal characteristics of the individual, micro environment (family, friends and networks), meso environment (regional context) and macro environment (national framework conditions) characteristics. He stated that the startup activity or propensity to start a new firm is affected by the motivation and motives of the individual entrepreneur. However, a range of contextual factors including the regional environment are also important. When explaining the regional variation in entrepreneurship rates, individual characteristics of entrepreneurs, national contextual variables and regional contextual variables play an important role. For example, tax legislation differs across nations more than it differs across regions. According to Sternberg, region specific characteristics create the right 'entrepreneurial climate' and influence potential entrepreneurs' decision to pursue start-ups as well as survival of startups. Even though the framework Sternberg provided is comprehensive and theory driven, the framework has not been tested in its entirety.

Hayton et al. (2002) offered the *Model of Culture's Association with Entrepreneurship* in light of their literature review. The authors stated that theorists and practitioners from economy, sociology and psychology have been interested in the differences in the level of entrepreneurship across nations. National culture is an important construct when examining the differences in the level of entrepreneurship across nations. Reviewing the IE behavioral research stream, Hayton et al. (2002) stated

that national culture has been reflected in studies of needs and motives, beliefs and behaviors, cognition and cultural values (at the societal and individual levels). Hayton et al.'s (2002) framework included institutional context, economic context and cultural values as macro level determinants of entrepreneurship. The reason Hayton et al.'s (2002) model has not been used to date could be the unclear conceptualization of individual values and societal values and their possible relationship to entrepreneurship.

In their Eclectic Theory of Entrepreneurship, Verheul, Wennekers, Audretsch and Thurik (2002) differentiated demand side and supply side factors to explain the role of government policies in determining short-term and long-term levels of entrepreneurship. Demand side factors consist of high levels of economic development, technological development and globalization that create entrepreneurial opportunities. Demand factors can be contrasted with supply factors, such as demographic characteristics (e.g. growth and spatial dispersion). In particular, the average level and disparity of income play an important role in the number of potential entrepreneurs in a society. Verheul et al. (2002) recognized that the entrepreneurial decision takes place at the individual level and that supply and demand factors are aggregate-level factors that create the conditions for the individual decision.

Expanding on the Eclectic Theory of Entrepreneurship, Wennekers et al., (2002) and Wennekers (2006) offered a framework that focused on the macro-level examination of entrepreneurship. The authors stated that technological, economic, demographic, cultural and institutional conditions affect opportunities, capabilities, preferences, risks and rewards that in turn affect a person's decision to be self-employed. At the aggregate

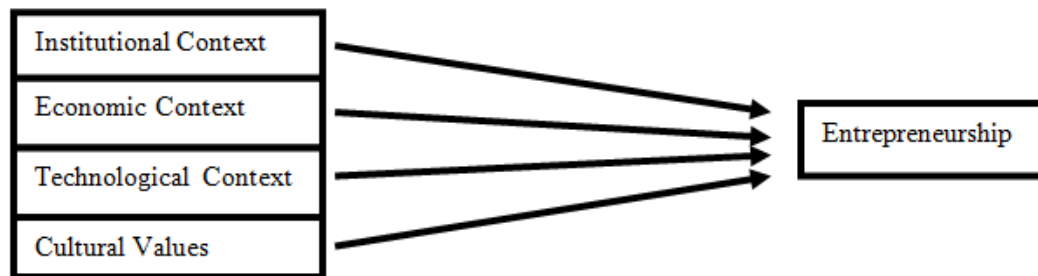


level, these conditions explain the differences in the rate of entrepreneurship across nations.

Each macro level framework is based on assumptions but all argue that macro level environmental conditions are important determinants of entrepreneurship at the micro or macro levels.

### **Framework to Examine Region-Level Relationship of Institutional, Economic, Technological and Cultural Context with Entrepreneurship**

I draw from Wennekers (2006) and the Eclectic Theory of Entrepreneurship to examine determinants of entrepreneurship at the within-country regional level. Even though many frameworks focus on the macro level determinants, Wennekers' framework is the most complete one. Figure 1 depicts my research model.



**Figure 1. Framework to Examine Region-Level Relationship between Institutional, Economic and Cultural Context and Entrepreneurship**

I use Hébert and Link's (1989) definition of entrepreneur, Low's (2001) definition of entrepreneurship and adopt Stephan and Uhlaner's (2010) operationalization. An entrepreneur "is someone who specializes in taking responsibility for and making

judgmental decisions that affect the location, form and the use of goods, resources or institutions” (Hébert & Link, 1989: 47), whereas entrepreneurship is “the process of identifying, valuing and capturing opportunity” (Low, 2001: 21). I operationalize entrepreneurship as the “the occupational choice to work for one’s own account and risk (i.e., the self-employed and other business owners; Hébert & Link, 1982; Wennekers, 2006).” (Stephan & Uhlaner, 2010: 1348).

Blanchflower and Oswald (1998) stated that self-employment is the simplest kind of entrepreneurship. According to Beugelsdijk and Noorderhaven (2004), self-employment or business ownership is a static indicator of entrepreneurship. Researchers use occupational choice to explain why individuals choose to pursue self-employment rather than waged employment. The occupational choice to work for one’s own account and risk (Stephan & Uhlaner, 2010) indicates that entrepreneurship is a choice made at the individual level. At the regional or national levels, aggregated occupational choice represents entrepreneurship levels (Thurik, Wennekers & Uhlaner, 2002; Wennekers et al., 2002; Wennekers, 2006). Occupational choice assumes that individuals are utility maximizers and they evaluate the expected returns from being self-employed (pursuing an entrepreneurial opportunity) versus being waged-employed (Baker, et al., 2005; Stephan & Uhlaner, 2010; Sternberg, 2011; Verheul et al., 2002; Wennekers, 2006) or unemployed.

An individual’s decision to become self-employed is affected by the demand and supply side factors, which are embedded within the larger environmental context. Factors that affect the supply of potential entrepreneurs in a society (Stephan & Uhlaner, 2010) are called supply side factors (Verheul et al., 2002). Psychological traits such as

the individuals' need for achievement, locus of control, risk-taking propensity, problem-solving style and innovativeness and leadership style have received attention (Hayton et al., 2002; McClelland 1975; Rotter 1966; Thornton, 1999). In addition, the characteristics of the population (such as demographic composition) (Verheul et al., 2002), skills of the individual (such as human capital), resources (such as financial capital) and social capital (Wennekers, 2006) are factors that affect the supply of potential entrepreneurs in a society. Demand side factors determine the stock or existence of entrepreneurial opportunities (Stephan & Uhlaner, 2010; Wennekers, 2006). Wennekers' (2006) model reflects the full range of environmental contextual factors that affect a potential entrepreneur's decision to pursue self-employment. Contextual factors that affect the stock of entrepreneurial opportunities include the quality of general national institutions, institutions aimed at supporting entrepreneurship (Stephan & Uhlaner, 2010) and economic, institutional and technological factors (Wennekers, 2006; Wennekers et al., 2002). Even though the potential entrepreneur's individual characteristics affect an individual's decision, the context of the potential entrepreneur also affects an individual's decision (Thornton, 1999) and these contextual factors affect both the availability of entrepreneurial opportunities and the supply of potential entrepreneurs.

Entrepreneurship research that is at the within-country region level has used contextual factors such as entrepreneurial attitude, self-efficacy, GDP, growth in GDP, unemployment rate and entrepreneurial climate, to examine differences in the level of entrepreneurship (e.g. Beugelsdijk & Noorderhaven, 2004; Bosma & Schutjens, 2011; Davidsson 1995; Davidsson & Wiklund, 1997; Tamásy, 2006; Sternberg & Lizenberger, 2004). Regional cultural values (that mirror national cultural values) are yet to receive

attention. However, when adopting a within-country region level of analysis, one must be careful since factors such as legislation and laws are near constant within a country (Bosma & Schutjens, 2011; Davidsson & Wiklund, 2001) and therefore the nested nature of relationships must be reflected in theory and analyses.

### **Institutional Context**

Institutional arrangements depicted in Figure 2 are macro-level socio-environmental factors (Kim, Morse, Mitchell & Seawright, 2010: 494). Individuals are embedded in country-specific and region-specific institutional arrangements that impact their decision to pursue waged employment versus self-employment. The field of IE has used three different types of institutional theories to examine the effects of institutional differences on entrepreneurship; IE researchers have drawn from (1) new institutional economics, (2) new organizational institutionalism and (3) comparative historical institutionalism.

*New institutional economics* researchers follow Douglas North and Oliver Williamson and view institutions as endogenous, adaptable constraints. Institutions are defined as “... the humanly devised constraints that structure human interaction. They are made up of formal constraints (e.g., rules, laws, constitutions), informal constraints (e.g., norms of behavior, conventions, self-imposed codes of conduct) and their enforcement characteristics. Together they define the incentive structure of societies and specifically economies” (North, 1990: 360).

IE researchers who draw from the new institutional economics focus on institutions that support/hinder new venture creation and affect the attitudes of

individuals towards venture creation (Alvarez, Urbano, Coduras & Ruiz-Navarro, 2011). Researchers who use the Eclectic Theory (Verheul et al., 2002) draw from North's conceptualization and definition of institutions. Studies include institutions such as governmental policies and governmental programs, education and training, intellectual property rights and the protection of those rights, cultural and social norms and entrepreneur's social image in their analyses (Urbano, 2006; Veciana & Urbano, 2008; Welter, 2005).

*New organizational institutionalism* (neo-institutional) researchers initially examined the reasons for homogeneity of organizational forms and practices across countries (DiMaggio & Powell, 1983). Later, studies focused on the role of actors in creating institutions and change in institutions (Greenwood, Oliver, Sahin & Suddaby, 2008). Neo-institutional theory defines institutions as the "taken for granted ways of acting, which derive from shared regulative, cognitive and normative frames" (Morgan & Kristensen, 2006: 1470). Researchers either focus on the variables representing one or more of the regulatory, normative and cognitive pillars underlying institutions or use an institutional distance measure.

IE researchers use institutional profiles to examine the effects of regulative, normative and cognitive variables on a variety of outcomes including venture creation and level of entrepreneurship (e.g., Busenitz et al. 2000; Dickson & Weaver, 2008; Tiessen, 1997). Researchers also include variables such as laws, regulations, rules and government policies including property rights, contract regulations, social security systems, financial systems, labor regulations and educational system (Veciana & Urbano 2008).

*Comparative historical institutionalism* examines the relations between institutions and economic actors as well as the link between institutions and the organization of economic activity (Hotho, 2009). IB and IE researchers who use comparative historical institutionalism as their starting point use Richard Whitley's (1992, 1999) National Business Systems Framework. Whitley focused on the link between the institutional context of a nation and economic behavior in that nation. According to Whitley, four key institutional dimensions are 1) the role assumed by the state, 2) the characteristics of the financial system, 3) the skill development system and 4) the dominant conventions governing trust and authority relations (Whitley, 1999).

IE researchers who draw from comparative historical institutionalism examine the link between Whitley's four key institutional dimensions and entrepreneurship. For example, Kim et al. (2010) examined the relationship between these four institutional factors and venture creation decisions mediated by entrepreneurial cognition. The authors used the legal system (property rights protection and regulatory complexity), financial system (equity-based versus bank-based), education system (average level of education) and trust relations (level of corruption) as predictors of venture creation decisions. Similarly, Bowen and De Clercq (2008) examined the link between the four key institutional dimensions and the type of entrepreneurship preferred across nations. Baker et al. (2005) also relied on Whitley's (1999) conceptualization of the institutional framework to analyze the context of potential entrepreneurs.

The new institutional economics, new organizational institutionalism and comparative historical institutionalism frameworks not only deal with institutional arrangements, but also differentiate between culture and institutions in several ways.

Some state that culture-related concepts such as trust, commitment and authority relationships are background institutions and are unobservable, whereas property rights, capital markets and education are observable social institutions (North, 1990; Verheul et al., 2002; Whitley, 1992). For example, Bosma and Schutjens (2011) differentiated between formal and informal institutions (North, 1990) without referring to culture whereas informal institutions include what many others would identify as cultural variables. Wennekers (2006) restricted his discussion of formal institutions to those that can be “observed in the outside world” (Wennekers, 2006: 81) and dealt with informal institutions as a part of the cultural domain. Stephan and Uhlaner (2010) and Levie and Autio (2008) used the term *culture* in a very similar way to that in which these other scholars use the term *informal institutions*. Stephan and Uhlaner (2010) considered the regulatory and economic environment to be the formal institutional conditions and culture to be the informal institutional conditions. The institutional factors that Levie and Autio (2008) considered were government policy, government regulations, education and training.

To examine the link between institutional arrangements and the level of entrepreneurship, I use institutional economics and follow the research that differentiates between the formal and informal institutions. Formal institutions are those that are explicit, in writing, sanctioned and enforced by government. I examine formal institutions as a predictor of the propensity to be self-employed. Factors such as regulatory complexity, property protection laws and social security system are important formal institutional factors. But these factors also show more variation across countries than within-countries (Bosma & Schutjens, 2011; Davidsson & Wiklund, 2001; Sternberg,

2011). Along with education level, I rely on the construct of institutional trust to capture the effect of formal institutions on the potential entrepreneur's decision to pursue self-employment. When testing the link between institutional context and entrepreneurship, I examine the effects of institutional trust and education level at the regional level only after I control for the effects of regulatory complexity, social security system and protection of property rights at the nation level.

### **Economic Context**

The economic context, as depicted in Figure 2, has received extensive attention in the IE literature. Researchers state that entrepreneurship is an important mechanism for economic development (Acs & Audretsch 1988; Schumpeter, 1934; Wennekers & Thurik 1999). A nation's (and perhaps also a region's) level of economic development is tied to higher levels of employment and innovation catered by higher levels of entrepreneurship. For example, the GEM research program examines the role of entrepreneurship in national economic growth. A variety of literatures including entrepreneurship, new economic geography and geography of innovation, point out the relationship between entrepreneurship and economic development. The new economic geography literature studies macroeconomic growth by accounting for spatial factors such as the agglomeration of knowledge and role of geographic structures (Acs & Audretsch, 2003; Acs & Varga, 2005; Fujita & Thisse, 2002). The geography of innovation literature points out that innovation (which is also used as an indicator of entrepreneurship (Davidsson & Wiklund, 2009; Shane, 1992, 1993)) is affected by knowledge spillovers and geographic concentration of knowledge (Audretsch & Feldman, 1996).



Research also indicates that the levels of entrepreneurship depend on the level of economic development (Acs, Desai & Hessels, 2008). All the macro level frameworks reviewed include some economic contextual variables. Wennekers (2006) considered high levels of economic development (e.g., annual economic growth) to be a key determinant of entrepreneurship. Hayton et al. (2002) also indicated that economic context, including industry infrastructure, economic growth and capacity for innovation, affects the level of entrepreneurial activity of a nation. On the other hand, Baker et al. (2005) focused on the social context of the potential entrepreneur and treated economic development as an outcome. Researchers who use the Eclectic Theory (Verheul et al., 2002; Wennekers, 2006) considered economic development to be a key determinant of entrepreneurship. I use GDP and unemployment as economic contextual factors.

### **Technological Context**

Verheul et al. (2002), Wennekers et al., (2002) and Wennekers (2006) highlighted the link between technological context and entrepreneurship. According to Wennekers (2006), technological advances have defined the course of history as well as the level and type of entrepreneurship. A variety of innovations, including production technology, led to the industrialization of Great Britain during the mid-1700s (Mokyr,2000). During the 19<sup>th</sup> and 20<sup>th</sup> century, we saw a variety of innovations which made current products and services obsolete and opened doors for new industries, lines of business and products and services (Jensen, 1993; Schumpeter, 1911/1934).

Technological context is an important factor affecting the entrepreneurial opportunities available (Verhaul et al., 2002). Even though Verhaul et al. (2002) and

Wennekers (2006) highlighted the importance of technological context and provided theoretical support for it, the authors did not measure the effects of technological context on entrepreneurship levels. In light of the international entrepreneurship literature, I include factors representing technological context that can affect a potential entrepreneur's decision to pursue self-employment. I include the effects of technological context expressed as (1) research and development (R&D) activities that result in new knowledge, products, processes and services, (2) a region's expenditure to sustain innovative technology, patenting and R&D and (3) wide-spread use of information and communication technologies. These factors could affect the presence of entrepreneurial opportunities in an environment as well as the availability of the potential workforce that a new venture needs to function.

### **National and Regional Culture**

Figure 2 indicates that cultural differences can affect levels of entrepreneurship across within-country regions. Societal cultural differences have been the topic of several lines of research including anthropology, sociology and international management. Works of Malinowski (1922/1965, 1939), Parsons and Shils (1951/2008), Inkeles and Levinson (1969) and Mead (1928) have stimulated several alternative approaches to culture research (Peterson, 2007). In International Business research, Hofstede (1980, 2001), Inglehart (1997), Schwartz (1994, 1999) and the GLOBE team (House, Hanges, Javidan & Dorfman, 2004) are among the most influential studies (Peterson & Sondergaard, 2011).

Management researchers have examined culture's direct and moderating effects on a variety of organizational phenomena, such as leadership and organizational commitment, by using the cultural value dimension scores of countries (Gelfand, Erez & Aycan, 2007; Kirkman, Lowe & Gibson, 2006). International Entrepreneurship researchers also use the cultural value dimension scores to compare the perceptions and behaviors, opportunity identification, network usage and personal characteristics of entrepreneurs, as well as the variation in entrepreneurship rates, across nations (Jones et al., 2011). For example, Uhlaner and Thurik (2007) examined the effects of postmaterialism on the differences in total entrepreneurial activity (measured by TEA) rates across countries. The authors find that postmaterialism is negatively associated with new business creation even after controlling for economic and demographic variables.

Researchers who use the construct of culture in their studies define culture as the “complex whole which includes knowledge, belief, art, law, morals, custom and any other capabilities and habits acquired by man as a member of society” (Tylor, 1871), shared meaning systems (Shweder & LeVine, 1984), patterned ways of thinking (Kluckhohn, 1954), “a set of rules or standards which, when acted upon by the members of a society, produce behavior that falls within a range of variance the members consider proper or acceptable” (Haviland, 1978/1990. pp. 30) or the collective programming of the mind that separates one group from the other (Hofstede, 1991).

Even though research about cultural differences has mostly been confined to studies based on national borders, one cannot state with certainty that nations are more important than regions or vice versa. There is support for presence of regional differences as well as homogeneity across regions of a nation. The majority of research

that includes national culture as a variable treats national borders as boundaries for culture. For example, Minkov and Hofstede (2012) examined values across 299 within-country regions from 28 countries and concluded that values clustered around national borders. Similarly, Kaasa et al.'s (2014) results show that countries such as Finland, Sweden, Denmark and Ireland do have homogeneous cultures. However, evidence from a variety of disciplines, including anthropology and international management, indicates that cultural boundaries do not always correspond with national boundaries (Boyacigiller, Kleinberg, Phillips, Sachmann, 2004; Dheer, Lenartowicz & Peterson, 2014; Dheer, Lenartowicz, Peterson & Petrescu, 2014; Lenartowicz & Roth, 2001; Lenartowicz, Johnson & White, 2003). Kaasa et al.'s (2014) analysis also shows that regional differences do exist in countries such as Portugal, Slovenia, Germany and Ukraine. Functional theory, neo-institutional theory and complexity theory provide theoretical explanations for the emergence of culture (Kara & Peterson, 2012) and can also provide theoretical support for the construction of cultural value dimensions at the regional level.

*Functional theorists* identify universal problems and examine the differences between societies in the solutions that they provide. The examination of the link between institutional structures and functions for each society's survival is the key in functional theory. Each structure/institution must fulfill the needs of the people in that society. This means that each structure has a function. Functional requirements within a close proximity are often proposed to be much more similar than those within a larger geographical area. Similar terrain, climate, language and history play an important role in the emergence of similar functional requirements.

For example, in an early study that helped to establish functional cultural theory, Malinowski (1922/1965) described the differences between the Kiriwina and Tilataula societies living on the Trobriand Islands (currently known as the Kiriwina Islands, part of the Territory of Papua). The author described differences between the sea-front (e.g. Kiriwina) and the inland (e.g. Tilataula) societies. Since the two societies live in geographically different parts of the same island that have different functional requirements, thus the needs of the societies, as well as the functions of institutions, differ. Malinowski comments on the differences in the settlements (evenly distributed settlements of agricultural villages vs. semicircle hugging the lagoon settlements of sea-front villages), occupations (fishing vs. agriculture), political, sociological and economic institutions of the two societies. These two groups are geographically focused and much smaller than modern countries.

Anthropologists, Kluckhohn and Strodtbeck (1961), dealt with multiple cultural subgroups living in the Rimrock region of the United States of America (American Southwest) by examining the differences in their value orientations. The authors noted the differences between the Zuni, Rimrock Navaho, Spanish-Americans of Atrisco, Mormons of Rimrock and Texans of Homestead communities, as well as some similarities between the two English-speaking communities and two Native American communities. According to Kluckhohn and Strodtbeck (1961: 4), even though the same number of alternatives are available to all cultures, these alternatives are all differently preferred, resulting in different cultural variations. These subcultural variations between geographically distinct communities not only distinguish the United States as a whole from other countries, but also are evident within a quite small region of the United States.

Lenartowicz and Roth (2001) used qualitative anthropological and sociological studies to identify regional level differences in the values of individuals in Brazil. For example, anthropological and sociological studies describe Mineiros as living in the mountains and working in gold mines. Because of constant supervision by tax collectors and traffic of newcomers and adventurers, Mineiros learned to protect themselves from outsiders, to be 'tricky' in order to survive and to live with their families close to their churches in communities that they can trust. Other groups (Cariocas, Paulistas and Gauchos) in southern Brazil adapted to different functional requirements.

Hofstede, Garibaldi de Hilal, Malvezzi, Tanure and Vincken (2010a) argued that the collective that is considered in comparative research can be nations, regions within nations, ethnic groups or organizations, although the specific nature of culture in each case may vary. Following this logic, the authors tried to replicate Hofstede's nation-level cultural dimensions among subcultures of Brazil. Hofstede et al. (2010a) could not replicate Hofstede's cross-national dimension structure at the state level in Brazil; but their analyses also showed cultural clustering of states into five regions that resemble the country's administrative divisions. The authors note significant regional differences between the populations living in the northeast and the north.

A functional argument has proposed relationships between climate and national culture that may well apply to regional culture. Van de Vliert (2008) argued that the existential needs for people living in colder and hotter climates differ and result in cognitive, affective and behavioral differences between nations of colder and hotter climates. Theories such as the climato-economic theory of organizational leadership and climato-economics of wages and work motivation have received attention (Van de Vliert,

Van Yperen & Thierry, 2008; Van de Vliert, 2006). Similarly, different regions of the same country (e.g. the USA, Russia, Italy and Turkey) could be exposed to different climates, which might result in the emergence of cognitive, affective and behavioral differences. Following Van de Vliert's argument, one can make a case for the link between climate differences between the northeast and southeast of the United States of America and leadership styles, for example. In fact, preferences for different types of leadership across regions of the USA have been shown by Peng and Peterson (2008) and Nisbett and Cohen (1996).

Regional analysis in anthropology focuses on the "spatial patterns produced by human behavior and institutions and the reciprocal effect of these patterns" (Hassig, 1996: 1081). Political units such as nations or states are not taken as the basic unit of analysis; instead, functional regions, which are determined by interactions of individuals in regions, are examined. Anthropologists either focus on a variety of differences across regions or on the social changes from traditional cultures that occurred in colonial times (Barnard, 1998). A few lines of management and marketing research use concepts from regional analysis. For example, Kahle (1986) argued that regional differences in cultures, climates, histories and resources of the United States resulted in regional differences in preferences in the use of media, shopping areas, products and services. Kahle (1986) used data from the coterminous United States (used only eight regions not nine) to test Garreau's (1981) "Nine nations of North America" concept. Kahle (1986) argued that value divisions are more distinct when regions are divided along cultural borders.

Application of *neo-institutional theory* to culture theory indicates that the initial emergence of rules, norms and shared understandings within a society can result from the

need to survive and reproduce. Berger and Luckman (1967) whose work is often drawn on by later neo-institutional theorists, suggested that many institutionalized practices originally had a functional basis, but that this basis became lost as practices became habitualized. In their view, just as organizations use innovations to create a competitive advantage and to survive, individuals seek ways to attain food and shelter. Habitualized ways become institutionalized social order by interactions, information exchange and coalition between individuals (DiMaggio & Powell, 1983). Behavior that is legitimate in a society, then, tends to continue even when functional necessities change. Newcomers feel the “inexorable push toward” adoption of these common rules, norms and shared understandings to be recognized as legitimate members of that society (DiMaggio & Powell, 1983). When we examine the development of transportation and communication technology (Leung & Peterson, 2011) and cultural anthropology, we see that during the initial formation of societies, the interaction and information exchange between individuals were limited to a small geographic region (Hassig, 1996).

For example, socio-historical factors led to the emergence of structures that support the presence of various subcultures in Spain (Gobernado, 2002). Quasi microsocieties of the Catalans and the Basques have their own semi-autonomous governments and regional languages (Dolan, Díez-Piñol, Fernández-Alles, Martín-Prius & Martínez-Fierro, 2004). Individuals born in those regions speak the language and adhere to the rules of that region.

*Complexity theory* asserts that a large number of elements interact and as a result of this interaction, system-level properties emerge (Latane, 1996). Within a system, the smallest elements, called cells, exist within a neighborhood of cells, which engage in an



action-reaction feedback loop (Anderson, 1999; Capra, 1996). Actions of a party have consequences for the neighboring cells, in other words actions create a reaction (or consequence) from the neighboring cells. The interaction of neighboring cells follows rules and scripted relationships. Societies have been conceptualized as complex systems where individuals engage in an action-reaction feedback loop. Once an individual is within a particular society, he/she does not have an option but to participate in this system. Beliefs, values and ideas of an individual are affected by the beliefs, values and ideas of the other individuals with whom he/she is interacting (Latane, 1996). Similarities in the knowledge structures of many individuals lead to emergent properties of the social system. Interactions of individuals with different knowledge structures result in different emergent properties and therefore, result in different social systems.

When we try to conceptualize the emergence of culture using a complexity theory perspective, we have to think about the size of the neighborhood of interacting cells (i.e., individuals) that we have to model. The interactions of the individuals at the regional level are likely to be the greatest and the action-reaction feedback loops will be most influential at the lower levels, such as region, city or neighborhood, rather than at the nation level. Moreover, emergent properties at the region level might be different enough to test the existence of regional societal differences.

For example, Nowak and Vallacher (2001) examined societal transition in Eastern Europe by collecting data from the 1980s and 1990s. The results indicate that spatial ‘clusters’ (geographic regions) of public opinion emerged. The authors state that the beliefs and attitudes of any single individual depend, for the most part, on the beliefs and attitudes of the others with whom he/she interacts.

In all three theoretical perspectives (functional, neo-institutional and complexity), the link between interaction and culture is discussed. Culture is learned and thus, our immediate surroundings play an important role in the norms, values, needs, preferences, taboos and practices we learn. In addition, literature indicates that national boundaries may not correspond to cultural boundaries. The presence of within-nation variability and subcultures has been a topic in a variety of disciplines such as anthropology, economics, marketing and international management. Even though empirical evidence has been ample, theoretical explanations have been sparse. In this section, I have tried to explain the emergence of culture at the region level using functional theory, neo-institutional theory and complexity theory.

### **Summary**

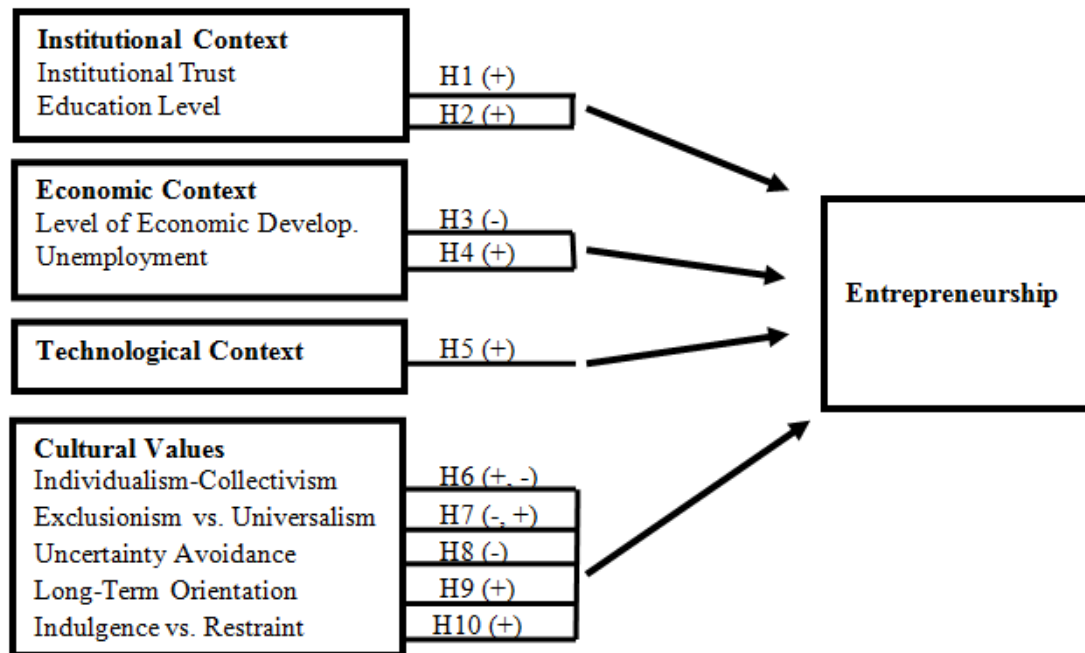
Literature review indicates that several definitions have been suggested and used for entrepreneurship. Even though there is no agreed upon definition, when macro level studies use self-employment as a proxy for entrepreneurship, a definition reflecting the occupational choice of the individual is used in analyses of determinants of entrepreneurship. As utility-maximizers, potential entrepreneurs evaluate the benefits and costs of pursuing self-employment. The self-employment decision is affected by personality and demographic characteristics of the potential entrepreneur. Because the individual is embedded in his/her environment, the decision is also affected by contextual factors. Several macro level frameworks have been offered and a wide variety of contextual factors have been conceptualized as determinants of entrepreneurship. One of the most comprehensive and applicable frameworks was offered by Wennekers (2006) to

examine the relationship between contextual factors, entrepreneurship and economic development. Wennekers stated that institutional, economic, technological and cultural context along with demographic variables determine levels of entrepreneurship (i.e. self-employment). I use this model to shed light onto determinants of entrepreneurship at the within-country regional level.

### III. RESEARCH MODEL AND HYPOTHESES

The macro level entrepreneurship frameworks depict the link between contextual factors and entrepreneurship and empirical studies support several of these. Adapting Wennekers' (2006) framework, I examine the relationship of institutional, economic and technological context variables as well as cultural values to entrepreneurship levels.

Figure 2 shows the hypothesized relationships.



**Figure 2. Detailed Relationship of Institutional, Economic, Technological and Cultural Context to Entrepreneurship**

Figure 3 expands on Figure 2 by adding specific variables under each category that will be considered in the empirical section of the present dissertation. I have followed Wennekers (2006), recent empirical studies (e.g. Stephan & Uhlaner, 2010; Bosma & Schutjens 2007, 2011) and literature reviews (Hayton et al., 2005; Jones et al., 2011) to identify the variables listed within each contextual factor in Figure 3. In the next section, I will first describe the nation-level effects that I will control for. Then I will expand on the relationship of institutional, economic, technological and cultural context to entrepreneurship and provide hypotheses for the region-level effects that will be tested.

### **Nation-Level Effects**

When conceptualizing the relationship between region-level factors and entrepreneurship one must keep in mind that there are nation-level variables that might affect entrepreneurship levels in a particular region. IE research suggests that country-level variables may explain the difference between countries or other geographic areas in the levels of entrepreneurship (Aldrich & Wiedenmayer, 1993; Baumol, 1990; Boettke & Coyne, 2009; Busenitz, et al., 2000; Henrekson, 2007; Salimath & Cullen, 2010). IE research points out that regulatory complexity, protection of property rights, social security and availability of finance are nation-level variables that have received attention (Bowen & De Clercq, 2008; Bjørnskov & Foss, 2006; Freytag & Thurik, 2007; Johnson, McMillan & Woodruff, 2002).

When considering the effects of nation-level variables on regional entrepreneurship rates, several issues must be considered. First, countries vary in the amount of central government control relative to local control. In the U.S.A, institutional

arrangements such as number of procedures to establish a new business or state taxes are determined by the states. In other nations, such as Luxemburg and Turkey, central government determines the applicable taxes and steps required to start a new business. Second, some institutional arrangements such as regulatory complexity, social security and protection of intellectual property rights show more variability at the nation level whereas others such as level of education might show more variation across regions. Third, conceptualization of institutional arrangements must include not only formal arrangements but also the propensity of entrepreneurs in a geographic area to perceive whether or not these institutional arrangements support entrepreneurship; potential entrepreneurs' decision to pursue self-employment can be affected by their perception of the institutional arrangements and these perceptions may vary systematically among geographic areas.

Regulatory complexity, the social security system and the protection of property rights over physical capital, profits and patents are important nation-level institutional contextual factors I will control for. Regulatory complexity is the “paperwork and administrative formalities that entrepreneurs must confront” (Bowen & De Clercq, 2008: 752) and can decrease the level of entrepreneurship in a country. Governments might require multiple procedures for registering a business, which could reach 19 in Mozambique costing the potential business owner US\$256 (Djankov, La Porta, Lopez-de-Silanes & Shleifer, 2002). Institutional complexity increases barriers to entry (Djankov et al., 2002) deterring potential entrepreneurs from starting new businesses or entrepreneurs from expanding rapidly (Johnson, Kaufmann & Shleifer, 1997). Potential entrepreneurs might decide to stay as waged employees instead of pursuing self-

employment since high regulatory complexity could decrease the attractiveness of starting a new business (Grilo & Thurik, 2005a). For example, Klapper, Laeven and Rajan (2004) tied the low levels of new business creation in Italy to the high cost of fulfilling regulations for setting up a new business (which is 20 percent of Italy's per capita GNP). Similarly, one of the findings of Dreher and Gassebner (2007) was that regulatory complexity (more specifically, the number of procedures required to start a new business) reduced entrepreneurial activity (measured by the percent of the adult population who are nascent entrepreneurs). Fonseca, Lopez-Garcia and Pissarides' (2001) results also supported the link between high start-up costs and lower levels of entrepreneurship across 18 countries.

A legal system that provides comprehensive social security could decrease the rate of entrepreneurship (Bosma, Hunt, Wennekers & Hessels, 2005; Henrekson, 2005). The ISSA (ISSA, 2012:1) defines social security as the “programs established by statute that insure individuals against interruption or loss of earning power and for certain special expenditures arising from marriage, birth or death.” Pensions and benefits covering unemployment, sickness, maternity or work injuries are financed from contributions made by an employee and his/her employer(s) usually using a specified percentage of earnings (ISSA, 2012). In addition, governments might choose to finance these social security programs partially instead of relying solely on the employee and employer contributions.

Strong social security arrangements can discourage potential entrepreneurs from pursuing self-employment when they consider the benefits of being self-employed versus a waged employee. This in turn affects the supply of entrepreneurs. In the case of waged-

employment, both the employee and their employer make social security contributions. When a potential entrepreneur pursues self-employment, the contributions must come from the entrepreneur himself or herself which increases the opportunity cost of pursuing self-employment (Hessels, van Stel, Brouwer & Wennekers, 2007; Hessels et al. 2008a ; Wennekers et al. 2002; Parker & Robson 2004). For example, Bosma et al. (2005) investigated the relationship between employment protection and total early-stage entrepreneurial activity (TEA) rates in 16 EU-countries. The authors stated that when it is costly for employers to dismiss workers and the cost of benefits schemes for employees are relatively high, rates of TEA are low. Similarly, Parker and Robson (2004) examined the relationship between self-employment rates and social security benefits. The authors concluded that the self-employment rate is negatively associated with employers' social security contributions across 12 nations.

The link between protection of property rights over physical capital, profits and patents to entrepreneurship has been emphasized by Schumpeter (1961); he stated that intellectual property is a basic motive for potential entrepreneurs. When potential entrepreneurs consider the choice between self-employment and waged employment, they consider how secure their investments, profits and intellectual properties will be. If the legal system is not strong enough to protect the investment or the intellectual property, potential entrepreneurs might not choose self-employment, resulting in lower levels of entrepreneurship at the aggregate level. Macro level entrepreneurship studies indicate that less secure property rights might lead to lower levels of entrepreneurship and to discourage investment (Knack & Keefer, 1995; Johnson et al., 2002) and innovation (Mauro, 1995). For example, weak protection of property rights in Russia



(Frye & Shleifer, 1997; Shleifer, 1997) resulted in lower investment levels by entrepreneurs. Similarly, Desai, Gomper and Lerner (2003) indicated that the protection of property rights is associated with higher levels of entrepreneurial activity in Central and Eastern Europe.

Availability of financial resources is another nation-level variable that might affect entrepreneurship (Wennekers, 2006). The importance of the availability of financial resources for entrepreneurship has been emphasized as early as Schumpeter (1911) and Knight (1921). When we use self-employment as a proxy for or a form of entrepreneurship, the IE literature indicates that the availability of external financing is important for potential entrepreneurs to be able to take advantage of opportunities (Johnson, et al, 2002; Baker et al., 2005) and affects the levels of entrepreneurship at the aggregate level. Wennekers (2006) stated that financial capital is important for businesses since business owners (including self-employed individuals) need to rent space, purchase raw material and equipment and possibly to invest in market research and advertising. Self-financing, informal investors, mortgage loans, commercial credit and bank loans are some of the ways individuals can secure financing to start a business or ensure survival of the business (Bygrave & Hunt, 2005; Wennekers, 2006).

Studies both at the individual level and aggregate level support the link between credit availability and entrepreneurship. For example, Evans and Jovanovic (1989) argued that lack of capital will prevent some potential entrepreneurs from setting up new businesses. Similarly, Blanchflower and Oswald (1998) concluded that potential entrepreneurs are concerned with obtaining capital and that the receipt of an inheritance or a gift is positively associated at the individual level with being self-employed. Lindh

and Ohlsson (1994) concluded that lottery winners were more likely to start a business since they had sufficient capital to start one.

Chrisman, Chua and Steier (2002) summarized workforce, globalization, government regulations, technology and access to capital as environmental factors that have received attention in previous entrepreneurship research. The authors concluded that access to capital was a significant concern for entrepreneurs in every region. In another study, Ovaska and Sobel (2004) included both the number of new enterprises and the number of new patent and trademark applications as a measure of entrepreneurial activity and concluded that credit availability and non-performing loans increased the number of new enterprises. At the aggregate level, the availability of capital to finance new business entry determines the supply of entrepreneurs.

The GEM 2004 report concluded that the presence of informal investors and TEA is positively correlated (Bygrave & Hunt, 2005). Alvarez et al.'s (2011) results also indicated that the availability of finance (defined as "the availability of financial resources, equity and debt for new and growing firms, including grants and subsidies" (Alvarez, Urbano, Coduras & Ruiz-Navarro, 2011:125)) is positively correlated with entrepreneurship in both the male and female samples.

I will test my hypotheses after I control for the effects of nation-level variables on region level entrepreneurship.

### **Institutional Context and Entrepreneurship**

As Figure 2 depicts, institutional context includes the humanly devised constraints that affect the decision of a potential entrepreneur to operate a business. IE literature

reviews (Hoskisson, Covin, Volberda & Johnson, 2011; Jones et al., 2011) suggest that more research is needed to understand the link between institutional context and entrepreneurship. Average education level and average perception of institutions are two institutional context variables that might affect region-level entrepreneurship levels.

*The link between institutional trust and entrepreneurship* The perception of the institutional environment may affect potential entrepreneurs' decision to pursue self-employment. Arenius and Minniti (2005) stated that entrepreneurs rely on perceptions which are subjective and often biased when making decisions. The perceptions are often different from objective reality. Institutional trust is defined as the "trust people have in institutions or organizations in a given society" (Dakhli & De Clercq, 2004: 113) or as the "wide-spread confidence that office holders and others who are directly and indirectly party to a transaction will, regardless of their identity, impartially and fairly enforce the rules that govern exchange" (Anokhin & Schulze, 2008: 467). Even if the same federal government provides the same legal support in all parts of a country, the perceptions of trust or confidence could differ across regions. For example, the actions of Spain's central government could be perceived differently by people in the Basques region and in Catalonia. Thus, institutional trust must be considered when examining the determinants of entrepreneurship.

When we examine the institutional environment of the potential entrepreneur, not only how strong the support that entrepreneurs are provided by the institutional environment *actually is* but also how strong the institutional environment is *perceived to be* is important. Several research streams use institutional profiles of nations to identify

differences, strengths and weaknesses (Berry, Guille'n & Zhou, 2010). Researchers do rely on the perceptions of the individuals, managers and entrepreneurs to compile these rankings. Across countries, citizens have different expectations for the legal system or the police with regard to the duties and responsibilities of that institution (Levi & Stoker 2000; Newton 1999). High institutional trust indicates that institutions do fulfill the expectations or norms of that society (Grönlund & Setälä, 2012; Warren, 1999).

Repeated interactions with institutions determine the perceived level of fairness, perceived neutrality of the institutions as well as perceived reliability of delivery of services (Anokhin & Schulze; 2008). An institutional environment that is perceived as accountable, incorrupt and providing impersonal enforcement of the law will allow markets to function efficiently lowering transaction costs (Anokhin & Schulze; 2008; Rose-Ackerman, 2001).

Institutional trust is essential for potential entrepreneurs to engage in entrepreneurial activity. Potential entrepreneurs pursue self-employment with the idea that self-employment will create more value and they will be able to capture this value (Baker et al. 2005). However, the perception that the justice system is unreliable could mean that opportunistic behaviors of others will result in lower levels of earnings for the entrepreneur (Anokhin & Schulze, 2008). On the other hand, the perception of the justice system as trustworthy may allow potential entrepreneurs to pursue opportunities since they believe that their rights will be protected by the trustworthy justice system.

Similarly, the perception of ineffective property protection laws might deter potential entrepreneurs from pursuing self-employment opportunities (Dakhli & De Clercq, 2004) since their perception is that their rights will not be protected. Grilo and

Irigoyen (2005) examined the determinants of preference for self-employment across 17 countries. They included demographic variables (such as gender, age and education level) and the perception of high administrative complexities and perceived lack of financial support. Their results indicated that the preference of self-employment and actual self-employment were negatively related to the perceived administrative complexities across 17 countries.

The perceptions of potential entrepreneurs play an important role in their decision to pursue self-employment rather than waged-employment. I propose that after controlling for the effects of regulatory complexity, social security system and protection of property rights at the nation level, region-level institutional trust will be positively related to the level of entrepreneurship.

**Hypothesis 1:** Level of institutional trust will be positively associated with level of entrepreneurship across regions.

*The link between education level and entrepreneurship* One of the institutional factors that affects the level of entrepreneurship is education. Verheul et al. (2002: 57) stated that education (1) provides people with autonomy, independence and self-confidence, (2) informs individuals about alternative career choices, (3) makes people better equipped to identify opportunities and (4) provides people with knowledge and skills to exploit those opportunities. All of these qualities promote the ability of individuals to pursue self-employment and create a workforce needed for new endeavors. At the individual level, potential entrepreneurs might decide to pursue self-employment (versus waged-employment) if they personally possess adequate human capital (resources, skills and

knowledge) (Verheul et al. 2002). Adequate human capital can be acquired or developed through education (Verheul et al. 2002). The decision to pursue self-employment will be positively affected if the potential entrepreneur believes that he/she might attain higher returns from their own appropriation of society's educational investment opportunities by pursuing self-employment (Aronson, 1991). Reynolds et al. (1999) stated that skills and knowledge are crucial to exploit entrepreneurial opportunities. The authors proposed that in order to increase entrepreneurial activity, governments need to invest in education (college, university and graduate programs) and individuals must be encouraged to pursue higher levels of education.

Even though theoretical explanations support the positive relationship between education and entrepreneurship, empirical findings have been mixed. Bates (1990) used the Characteristics of Business Owners (CBO) database to examine the relationship between longevity of small businesses and characteristics of the entrepreneurs at the individual level. Bates (1990) concluded that both being self-employed and staying self-employed over time are positively associated with higher levels of education. Bowen and De Clercq (2008) examined the relationship between a variety of institutional factors, including education and entrepreneurship across 40 nations. The authors concluded that the presence of educational institutions that allows individuals to invest in human capital is positively associated with the rates of high-growth entrepreneurship. In another study, Reynolds et al. (1999) examined the link between a variety of environmental factors and entrepreneurship (measured as new firm formation rates) at the nation level. The authors concluded that larger investment in education at the tertiary level (not primary or secondary levels) was positively associated with higher rates of new firm formation

across ten nations. However, we cannot conclude from these results that education will lead to higher levels of entrepreneurship in every industry; Bates' (1995) results showed that education (human capital) was an important factor for the decision to pursue self-employment in skilled service sectors, but not in construction sectors.

On the other hand, the attainment of higher levels of education (beyond a bachelor's degree) might make self-employment unattractive (Aronson, 1991) if well-educated people can earn higher wages as waged employees (Macieira, 2009; Wiklund, Delmar & Hellerstedt, 2004). Wiklund et al. (2004) examined the science and technology labor force in Sweden. One of the authors' conclusions was that high levels of education result in higher salaries (of the waged-employees) making entrepreneurship (self-employment) an unattractive alternative. Very well-educated individuals think they can receive more money and be promoted more easily in a waged-employment position than in a self-employed position (Wiklund et al., 2004). Similarly Livanos (2009) examined the effects of several factors, including gender, education, occupation and marital status on the propensity to pursue self-employment in Greece and the UK. Livanos (2009) concluded that in both Greece and the UK, individuals with primary and secondary education are more likely to be self-employed than are people holding higher degrees.

In addition to education affecting the levels of self-efficacy of potential entrepreneurs, it also affects the pool of highly-educated workforce a potential entrepreneur might need to start a business (Armington & Acs, 2002; Fotopoulos & Spence, 1999; Sternberg, 2011). Not all start-ups rely on the discovery, motivation or experience of the entrepreneur. For example, high-tech start-ups not only rely on the ideas and initiatives of the entrepreneur but also on the experience, quality and human

capital of the employees. In addition, certain sectors such as financial or banking sectors might require a highly educated workforce. A potential entrepreneur might be more likely to start a financial advising firm if an experienced and educated workforce is available. The average education of the region could affect the availability of these types of employees. Potential entrepreneurs might decide to pursue self-employment because a highly educated workforce that is essential for the business to function is available. Thus, the availability of a highly educated workforce might also increase the levels of entrepreneurship.

Potential entrepreneurs with higher levels of education could have more independence and self-esteem and might be more equipped to identify opportunities and act upon them. Thus, the average level of education of a region could determine the level of entrepreneurship in that region. In addition, education could also affect the availability of a workforce that potential entrepreneurs might need for new endeavors. Therefore, after controlling for the effects of nation-level control variables, I propose

**Hypothesis 2:** Level of education will be positively associated with level of entrepreneurship across regions.

### **Economic Context and Entrepreneurship**

Economic context is one of the environmental factors that affect entrepreneurship (e.g. Acs, Audretsch & Evans, 1994; Audretsch, Carree & Thurik, 2001; Bosma, de Wit & Carree, 2003; Carree, van Stel, Thurik & Wennekers, 2002). At the individual level, economic context affects potential entrepreneurs' evaluation of both the risks/rewards and the appropriability of those rewards from self-employment versus waged-



employment (Baker et al., 2005; Blau, Gustad, Jesson, Parnes & Wilcox, 1956; Wennekers et al., 2002); but the effects are complex. On the one hand, challenging economic conditions place resource pressure on all sorts of business and employment opportunities, but particularly on the ability of the smallest of businesses to arrange financing and produce sales. On the other hand, challenging economic conditions can restrain larger employers from hiring and force individuals to resort to low-level self-employment.

IE researchers draw from the economics literature and include a variety of factors such as prosperity, labor income share, unemployment, tax rates, GDP and female labor share to examine the effects of economic context on entrepreneurship (e.g. Acs et al., 1994; Audretsch et al., 2002; Hofstede et al. 2004; Verheul et al. 2002; Wennekers et al. 2002; Stephan & Uhlaner, 2010; Wennekers, 2006). When including contextual variables as determinants of entrepreneurship (measured as self-employment), one has to be careful about the time and location of the study. Even though tax rates, female labor share and competition were relevant for the rebounding of entrepreneurship at the end of 20<sup>th</sup> century (Acs et al., 1994; Audretsch et al., 2002), they might not be relevant for a regional level study of entrepreneurship in 21<sup>st</sup> century. I focus on the level of economic development and unemployment as the most relevant economic variables affecting entrepreneurship rates across regions.

*The link between economic development and entrepreneurship*    Level of prosperity or level of economic development has received attention as a predictor of the level of entrepreneurship. Historical accounts track the relationship between economic

development and business ownership (Carree et al., 2002; Wennekers, 2006). According to Carree et al. (2002), until the mid-1970s there was a negative relationship between a country's level of economic development and entrepreneurship. However, this trend was reversed after the mid-1970s due to globalization and technological advances, deregulation and privatization, the emergence of new industries and more entrepreneurial opportunities. The exchange of ideas, goods, services and capital ended the dominance of Europe in traditional industries (machine tools, textile, automobile) and led to development of new industries such as software and biotechnology where small firms thrived (Audretsch & Thurik, 2000; Carree et al., 2002). Technological advances allowed small entrepreneurial firms to compete, since economies of scale were no longer an important competitive advantage (Carree et al., 2002; Jovanovic, 1993).

Researchers that propose a negative relationship between the level of development and entrepreneurship draw from Lucas (1978) who argued that an increase in wages could lead to an increase in the opportunity cost for the potential entrepreneur, thus waged employees will not pursue self-employment (Carree et al. 2002; Wennekers, 2006). The decision of a potential entrepreneur might hinge on the risk associated with pursuing self-employment versus the safety of waged employment (Iyigun & Owen, 1998). Higher opportunity cost affects the supply of potential entrepreneurs.

Acs et al. (1994) examined the determinants of self-employment between 1966 and 1990. The authors included a variety of variables such as economic development, changes in industry composition, high technology, unemployment and female labor force participation. Acs et al. (1994) found support for a negative relationship between economic development (per capita GDP) and self-employment. Similarly, Spencer and

Gomez (2004) argued that the move from simple manufacturing to advanced manufacturing techniques results in higher barriers for entry and proposed a negative relationship between economic development and entrepreneurship. Their results supported this negative relationship.

Considering that my sample consists of regions of Europe, an area of the world with high economic development, I expect to find a negative relationship between the level of economic development and the level of entrepreneurship. Because wages are high, self-employment will not be attractive for waged employees. High opportunity cost and the relative safety of waged employment will deter potential entrepreneurs from pursuing self-employment. I propose that after controlling for the effects of nation-level variables,

**Hypothesis 3:** The level of economic development will be negatively associated with level of entrepreneurship across regions.

*The link between unemployment and entrepreneurship* Research about the link between unemployment and entrepreneurship supports contradictory findings. Studies examining the relationship between unemployment and entrepreneurship at the aggregate level (measured as self-employment, new firm formation or TEA) rely on Knight (1921) and Oxenfeldt (1943) for theoretical support (e.g. Audretsch et al., 2001; Storey, 1991; Wennekens, 2006). Knight (1921) indicated that individuals have a choice when it comes to how to earn income -- unemployment, self-employment or waged employment. Knight (1921) also stated that the choice depends on the relative market price of the three choices. If the individual is unemployed or has low prospects for waged employment,

self-employment is an attractive alternative (Oxenfeldt, 1943) and the opportunity cost of pursuing self-employment is low (Audretsch et al. 2001). Oxenfeldt (1943) stated that self-employment is an escape from unemployment. When researchers take an aggregate level of analysis, they indicate that higher levels of unemployment will lead to higher levels of entrepreneurship.

However, the empirical results for this early, intuitive line of thought have been mixed. Some results indicate a positive relationship, whereas others support a negative relationship between unemployment and entrepreneurship (Audretsch et al., 2001). Individuals, when unemployed, might pursue self-employment since the opportunity cost of starting a business is low (Audretsch et al., 2001; Storey, 1991) and their expected income from self-employment is higher than from unemployment (Knight, 1921). For example, survey results of Storey (1982) and Johnson (1986), as well as time series estimates of Hudson (1987, 1989) supported a positive relationship between unemployment levels and levels of firm formation in the US and UK. Foti and Vivarelli's (1994) results supported this link in an Italian sample. Evans and Leighton (1990) examined the effect of being unemployed on small business formation between 1968-1987 in the United States. The authors stated that unemployed individuals were twice as likely to enter self-employment than were individuals who are not unemployed. At the nation level, Audretsch et al. (2001) examined the link between unemployment and entrepreneurship as well as the link between entrepreneurship and unemployment in 23 Organization for Economic Co-operation and Development (OECD) countries. The authors indicated that the levels of unemployment have a positive impact on subsequent entrepreneurship levels.

Research also supports a negative association between unemployment levels and entrepreneurship levels at the aggregate level. Unemployed individuals might possess lower levels of human capital (education, experience) and entrepreneurial talent than do employed individuals (Jovanovic, 1982; Audretsch et al., 2001); thus, it might not be easy for the unemployed to start a business. Storey (1991) argued that the relationship between unemployment and new firm formation is non-linear. Unemployment can lead to an increase in new firm formation only at certain levels of unemployment, whereas once the 'critical' level of unemployment is reached, unemployment leads to lower levels of new firm formation.

Higher levels of unemployment in a country over time could indicate an economic downturn and unfavorable economic conditions could stagnate new firm creation. In addition, the use of time series or cross sectional data could lead to different results (Storey, 1991). For example, Garofoli (1994) examined the determinants of new firm formation (measured as firm birth rate) in 84 Italian regions. The author included production structure, social structure and profession employment structure to examine the differences in new firm formation across regions. He concluded that unemployment negatively influenced new firm formation. Similarly, Audretsch and Fritsch (1994) found a negative relationship between unemployment and new-firm startups (measured as new firm births relative to the number of existing firms and number of new firm births relative to the size of the workforce) across 75 German regions. Armington and Acs (2002) suggested that industry might play an important role in determining the link between unemployment and entrepreneurship. That is, only in industries with low capital requirements might we see a positive relationship between unemployment and

entrepreneurship. In another study, Hofstede et al. (2004) examined the link between national culture and entrepreneurship, taking into account economic variables such as female labor share, GDP per capita and unemployment rate. Hofstede et al. (2004) found a positive relationship between the level of unemployment and entrepreneurship across 23 countries.

Since the opportunity cost for the unemployed will be very small, I argue that unemployed individuals will be more willing to engage in self-employment. When we examine the relationship at the regional level, I expect to find a positive relationship between the levels of unemployment and the levels of self-employment; i.e. regions with high unemployment rates will also have high self-employment rates. Time lag must be considered because it takes time between being unemployed, making the decision to pursue self-employment and being self-employed. Thus after controlling for the effects of national level variables, I propose:

**Hypothesis 4:** The level of unemployment will be positively associated with level of entrepreneurship across regions.

### **Technological Context and Entrepreneurship**

Technological context could affect the number of entrepreneurial opportunities available. IE literature (Dakhli & De Clercq, 2004; Furman, Porter & Stern, 2002; Wennekers, 2006) indicates that certain factors such as (1) research and development (R&D) activities that result in new knowledge, products, processes and services, (2) a country's/region's expenditure to sustain innovative technology, patenting and R&D and

(3) the wide-spread use of information and communication technologies must be considered when examining determinants of entrepreneurship.

The regions that have a higher number of firms and universities that engage in R&D activities as well as regions with higher levels of R&D spending can have higher levels of entrepreneurship because more entrepreneurial opportunities will be present. Knowledge can be tacit or explicit (Polanyi, 1967); explicit knowledge can be codified and transmittable by written or spoken language, whereas at least some tacit knowledge can be partially transmitted through metaphors or observation of the application of the knowledge (Nonaka, 1994; Peterson & Pike, 2002). Technology can affect the invention or dissemination of both forms of new knowledge. Dissemination of knowledge is important for the creation of entrepreneurial opportunities. According to Audretsch and Feldman (1996), Acs, Braunerhjelm, Audretsch and Carlsson (2009), Jaffe (1989) and Acs et al. (1992, 1994) investments in R&D by private corporations and universities might spill over and create opportunities for third party firms and entrepreneurs. In other words, knowledge spillovers increase the opportunity for new knowledge to cross boundaries among organizations and universities that engage in R&D activities (Acs & Varga, 2005; Romer, 1990; Thursby & Thursby, 2007).

Regional start-up rates in high-tech industries are positively correlated with the proximity to universities (e.g. Astebro & Bazzazian, 2011; Audretsch & Lehmann, 2005; Rothaermel & Ku, 2008). Moreover, tacit knowledge (or 'sticky' knowledge (Von Hippel, 1994)) developed for a specific product, service or industry sometimes can spill over and be used for a different application (Arrow, 1962), thus creating opportunities. For example, firm founding rates are higher in certain geographic areas (Stuart &

Sorenson, 2003) resulting in agglomeration effects, such as production enhancements and heightened demand (Marshall, 1920) which indicates that the geographic proximity to large organizations and universities that engage in R&D activities might be important to reap the benefits of knowledge spillovers (Acs et al., 2002; Autant-Bernard, 2001; Fischer & Varga, 2003; Jaffe, Trajtenberg & Henderson, 1993; Varga, 1998).

Advances in information and communication technologies (ICT) can also increase entrepreneurial opportunities present. Potential entrepreneurs can start a business knowing that he/she does not have to perform all of the business functions in-house. ICT can help small businesses and new enterprises to compete in the marketplace (Wennekers et al., 2005) by providing access to outsourcing. Small and newly established firms can take advantage of the opportunity to outsource almost all functions as long as the market is more efficient in performing those functions than are they themselves. In addition, the coordination of these functions can be facilitated by ITC. For example, small or new enterprises can outsource their accounting, shipping and even production functions by utilizing the market instead of housing all these functions internally; thus, the importance of economies of scale may decrease, reducing the advantages of large businesses over small ones.

Knowledge can disseminate through the use of ICT. Knowledge can be transferred, rather inexpensively, across physical distance via internet, intranet and videoconferencing (Audretsch & Thurik, 2001; Wennekers & Thurik, 1999). Thus, ICT may increase entrepreneurial opportunities by allowing entrepreneurs to combine information in new ways in order to create new knowledge or products (Wennekers & Thurik, 1999). Invention, diffusion of new information and communication technologies



shorten the product life cycle and bring new opportunities. For example, the introduction of the iPhone 5 on September 13, 2012 revealed that the new model would use a new charger, which made all the other iPhone, iPad and iPod chargers obsolete. At the same time, new opportunities to produce charger adaptors and new accessories for the iPhone 5 were created.

The technological context is one of the key factors influencing entrepreneurship levels (Wennekers & Thurik, 1999; Wennekers et al., 2002; Wennekers, 2006). Higher levels of R&D expenditure and activities will result in more entrepreneurial opportunities and therefore in higher levels of entrepreneurship; geographic proximity is the key for exploitation of knowledge spillovers (Audretsch, Grilo & Thurik, 2011). In addition, wide-spread use of ICT affects the level of information available for the potential entrepreneurs in that region, resulting in increased entrepreneurial opportunities.

**Hypothesis 5:** The level of technological development will be positively associated with level of entrepreneurship across regions.

### **Regional Culture and Entrepreneurship**

Literature reviews and recent empirical studies indicate that national culture is one of the determinants of entrepreneurship at the macro level. Studies mostly rely on Hofstede's conceptualization of culture when the examination is at the nation level, although the exclusive use of Hofstede's dimensions is evolving (Peterson & Sondergaard, 2011). However, region-level entrepreneurship studies have yet to account for the effects of regional cultural differences on entrepreneurship. In this section, I draw from the international entrepreneurship and international management literatures to (1)

describe the most relevant cultural dimensions and (2) explain their relationship to entrepreneurship.

In the *Culture's Consequences* (Hofstede, 1980), Hofstede summarized his findings from the IBM survey which covered over 50 countries. He identified four cultural dimensions, which differentiate one country from the others. Later, (Hofstede & Bond, 1988) cultural dimension of Confucian dynamism (later renamed long-term orientation (Hofstede, 1991)) was added to individualism-collectivism, masculinity, uncertainty avoidance and power distance. As discussed below, drawing from WVS data, Hofstede has adopted other indicators and some additional dimensions into his original model (Hofstede, Minkov & Hofstede, 2010). Other researchers followed Hofstede's conceptualization of culture and identified cultural dimensions that reflect the differences among societies. The most notable ones are GLOBE (House et al., 2004), Schwartz (1992, 1994), Inglehart (1997), Leung and Bond (1989), Peterson and Smith (2000) and Minkov (2011). When we review IE studies we see that only a handful of nation-level studies have used GLOBE's (Stephan & Uhlaner, 2010), Inglehart's (e.g. Uhlaner and Thurik, 2004) or Schwartz's (e.g. Holt, 1997) cultural dimension.

Examining the effects of culture using different models of dimensions would be useful. However, examining the effects of cultural dimensions at the regional level can be only be possible by using the empirical work linking cultural dimensions to measures available from secondary sources (like the EVS). Also, the only empirical work linking any other dimensions than Hofstede's to entrepreneurship is based on the dimensions from the GLOBE project that are most closely related to Hofstede's dimensions. Thus, my focus is on the application of what has been theoretically and empirically supported

by the nation-level studies to this region-level study. Consequently, for reasons detailed in the following, I focus on the relationship between Hofstede's (individualism-collectivism, uncertainty avoidance and long-term orientation) and Minkov's (exclusionism versus universalism and indulgence versus restraint) conceptualization of cultural dimensions and their effects on entrepreneurship at the regional level.

Hofstede's cultural model includes six dimensions (Hofstede et al., 2010b), but not all dimensions are conceptually related to entrepreneurship (Hofstede et al. 2004) (when self-employment is used as the measure of entrepreneurship). I focus only on the dimensions that are conceptually relevant to entrepreneurship, as indicated by the IE literature (Acs et al., 1994; Hayton et al. 2002; Hofstede et al. 2004; Wennekers, 2006): *individualism-collectivism*, *uncertainty avoidance* and *long-term orientation* (LTO). I also include dimensions from a relatively new line of culture dimensions research that is being pursued by Minkov (2007, 2008 and 2011). Minkov started with the question of why some nations have values that promote economic growth, whereas other nations do not attach the same importance to these values. He designed his dimensions based on the WVS. Minkov identified *indulgence* versus *restraint*, *monumentalism* versus *flexumility*, *hypometropia* versus *prudence* and *exclusionism* versus *universalism* dimensions. Minkov's universalism versus exclusionism and indulgence versus restraint dimensions are especially relevant for entrepreneurship research as indicated below.

Individualism-collectivism refers to the relationship between the individual and the group (Hofstede 2001). Hofstede et al. (2010b: 92) stated that in individualistic societies, "the ties between individuals are loose: everyone is expected to look after him- or herself and his or her immediate family." Individuals in an individualistic society value

self-achievement, freedom at the job, work that is challenging and a personal sense of accomplishment. Collectivism, which is the other end of the individualism-collectivism continuum, refers to “societies in which people from birth onward are integrated into strong cohesive in-groups” (Hofstede et al., 2010b:92). Individuals in a collectivist society value loyalty, harmony, group achievement and emphasize membership.

Minkov (2011) stated that exclusionism versus universalism is conceptually related to Hofstede’s individualism-collectivism dimensions such that both deal with the relationship between the individual and the collective. Minkov pointed out that exclusionism versus universalism is a bipolar dimension that deals with the “behaviors, values and norms, that have to do with different criteria for the treatment of people and the distribution of favors and privileges: discriminatory and group-based versus universal and individual-based” (Minkov, 2011: 188). In an exclusionist society, favors and privileges are reserved for friends and relatives and stronger ties exist between relatives and others in the in-group than outsiders. Minkov (2011) indicated that in-groups can consist of tribes, extended families or people who are bound by kinship and tested friendship. While people are loyal to their in-group, interests of others, strangers or others in the out-group are neglected. The opposite of exclusionism is universalism, which indicates weaker ties between generations or groups of relatives. At the same time, people in universalist societies believe that everybody deserves the same treatment when making hiring and promotion decisions or when conducting business.

Hofstede’s uncertainty avoidance dimension is defined as “the extent to which the members of a culture feel threatened by ambiguous or unknown situations” (Hofstede et al., 2010b: 191). All humans are aware of the past, present and future and the passage of

time. We are also aware of the uncertainty of the future. Societies use technology, law and religion to defend against (or cope with) uncertainties. The cultural heritage of a society establishes ways to cope with uncertainties and these ways are maintained by the family, school and other institutions within that society. In countries that have high uncertainty avoidance, people avoid uncertain situations. They look for predictability and interpretability, which result in structured institutions, organizations and relationships. Hofstede (2001) stated that individuals in a high uncertainty avoidance culture might prefer secure positions with secure benefits.

The LTO dimension emerged from the Chinese Value Survey. LTO (originally called *Confucian work dynamism* by Bond) is the “extent to which a culture programs its members to accept delayed gratification of their material, social and emotional needs” (Hofstede, 2001: xx). Individuals in short-term orientation societies respect traditions, expect quick results, reciprocate for greetings, favors and gifts, and value tolerance, leisure time and personal steadiness and stability. In addition, people in short-term orientation societies tend to save a small share of additional income. Individuals in long-term orientation societies display higher levels of persistence, perseverance, thrift and personal adaptability. Individuals believe that the most important events in life will occur in the future and save a large portion of their additional income.

Following Minkov’s analysis, Hofstede et al. (2010b) added indulgence versus restraint as the sixth dimension to Hofstede’s model. Indulgence versus restraint is a bipolar dimension where indulgence and restraint occupy opposite poles. Hofstede et al. (2010b: 281) defined indulgence as the “tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun.” Societies that

are high on the restraint dimension subscribe to the view that “such gratification needs to be curbed and regulated by strict social norms” (Hofstede et al. 2010b: 281). However, gratification does not refer to human desire in general; it refers to gratification with regard to enjoying life and having fun. For example, individuals in high indulgence societies tend to act as they please, spend money and engage in leisurely and fun-related activities freely. Enjoying life and having fun is what is important to people in these societies, not hard work or thrift. Economic development is not a top priority and strong government is viewed as oppression. Individuals spend their disposable income freely (Minkov, 2011: 86).

Hofstede et al. (2010b) explained the relationship between Inglehart’s well-being versus survival dimension and indulgence and restraint dimension by stating that Inglehart’s items that were related to happiness actually forms indulgence versus restraint dimension. Hofstede et al. (2010b) also stated that the indulgence versus restraint dimension is conceptually associated with uncertainty avoidance. In addition, the distinction between loose and tight societies also shed some light onto the indulgence versus restraint dimension. Loose societies tolerate deviant behavior and many alternatives are present and accepted. Whereas, tight societies control deviant behavior by group organization, formality, permanence, durability and solidarity (Hofstede et al. 2010b). Even though the dimension is conceptually relevant to uncertainty avoidance and has a reliable measure, it is relatively new and deserves more study (Hofstede et al., 2010b).

*The link between individualism-collectivism and entrepreneurship and the link between universalism versus exclusionism and entrepreneurship* Research supports a positive link between entrepreneurship and both individualism and collectivism. The outcome measured and the level of analysis could affect the nature of this relationship. I provide support for competing hypotheses for the relationship between individualism and entrepreneurship as well as for the relationship between collectivism and entrepreneurship. Similar conclusions can be applied to the relationship between universalism versus exclusionism and entrepreneurship.

The line of research that supports the positive link between individualism and entrepreneurship argues that individuals in an individualistic society possess qualities that promote entrepreneurship. Individualistic societies promote autonomy, individual decision making, personal accomplishment and individual initiative (Hofstede, 2001). Where in collectivistic societies, individual initiative is not the norm and group achievement is valued. The decision to pursue self-employment requires individual initiative. The person who chooses self-employment exhibits autonomy and makes all business related decisions. The success of the business can be seen as personal accomplishment. Mueller and Thomas (2000) covered the relevance of culture in comparative entrepreneurship research. The authors stated that locus of control and innovativeness are two important entrepreneurial traits and both are more prevalent in individualistic societies.

Tiessen (1997) proposed a framework to conceptualize the relationship between individualism-collectivism and entrepreneurship. Tiessen conceptualized individualism and collectivism as two separate concepts and argued that both individualism and

collectivism promote different aspects of entrepreneurship. Tiessen posited that firm founding, independent startups and innovation rates would be higher in individualistic societies. For example, Shane (1992) examined the link between culture and national rates of innovation (per capita number of invention patents granted) across 33 countries. Shane (1992) tied characteristics such as freedom, independence and non-conformity found mostly in individualistic nations to higher levels of invention rates. His results supported a positive relationship between individualism and innovation rates. Pinillos and Reyes (2009) examined the relationship between individualism and entrepreneurship measured by TEA. The authors indicate that the conflicting relationship between individualism and entrepreneurship can be due to differences in development levels. Pinillos and Reyes' (2009) results indicated that the positive relationship between individualism and entrepreneurship exists for highly developed nations not for medium and low development levels.

The behaviors promoted in an individualistic society could result in higher levels of entrepreneurship in that society. Individuals in an individualistic society are socialized to exhibit autonomy, individual decision making and individual initiative. The decision to pursue self-employment could be seen as individual initiative. For this reason, level of individualism can be positively associated with level of entrepreneurship. Due to a conceptual similarity between Hofstede's individualism-collectivism dimension and Minkov's exclusionism versus universalism dimension, I expect a similar relationship between exclusionism versus universalism and entrepreneurship.

**Hypothesis 6a:** The level of individualism will be positively associated with level of entrepreneurship across regions.



**Hypothesis 6b:** The level of exclusionism will be negatively associated with level of entrepreneurship across regions.

Macro entrepreneurship literature researchers have used different measures of entrepreneurship. When self-employment is used to measure entrepreneurship, research results do support a negative relationship between individualism and entrepreneurship. Different explanations have been offered for this negative relationship. For example, Baum, Olian, Erez, Schnell, Smith, Sims, Scully and Smith (1993) hypothesized that lower levels of individualism would be positively associated with entrepreneurship rates (measured as self-employment). The authors stated that individuals in individualistic countries can do things their way and satisfy their motivational needs; however, in collectivistic societies, individuals might not be able to satisfy their own motivational needs and select self-employment rather than waged-employment. Hofstede et al. (2004) used this line of theory and hypothesized a negative relationship between individualism and entrepreneurship (measured as self-employment). The authors tested their hypothesis using both Hofstede's original country scores for individualism and scores from Hoppe's (1990) replication; their results were supported when Hoppe's (1990) scores for individualism were used but not when Hofstede's were used.

Another explanation for the negative relationship between individualism and entrepreneurship is that individuals who pursue self-employment need financial support to set up businesses and in highly collectivist societies, financing can more readily be obtained from family, close friends and neighbors. Since collectivism is associated with a lower levels of GDP (Hofstede, 2001), individuals in a collectivist society might lack the

financial means to pursue self-employment. In my model, the relationship between GDP and entrepreneurship is examined in economic context analysis; I will include GDP as a control when testing the relationship between cultural context and entrepreneurship if there is statistically significant relationship between GDP and entrepreneurship. In addition, individuals might have difficulty securing capital supplied by financial institutions. Resources such as family, close friends and neighbors could become sources of financing in a collectivistic society, allowing individuals to start up their own business. Family members, close friends and neighbors are more willing to offer help in a collectivistic society than in an individualistic society. For example, Peterson (1995) examined the motives, abilities and resources of Cuban-born entrepreneurs in South Florida. These entrepreneurs were born in Cuba and migrated to the US sometime during or after their high school education. These Cuban-born entrepreneurs relied on social networks, partners and savings when starting a business in the US. Collectivism might also help entrepreneurs stay in business by relying on friends and family for referrals. For example, researchers have observed concepts like *guanxi* (So & Walker, 2005; Xin & Pearce, 1996), *inmak*, *kankei* (Hitt, Lee & Yucel, 2002) and *wasta* (Cunningham & Sarayrah, 1993), which indicate reliance on interpersonal ties. For example, *guanxi* is observed in China and means that individuals with particular ties rely on each other for reciprocal obligation and assistance. Similarly, *inmak* is observed in Korea, *kankei* is observed in Japan and *wasta* is observed in Arab nations (Smith, 2008). In a collectivistic society, social ties and reciprocation might play an important role in keeping a business afloat.

Several nation-level studies support this negative relationship between individualism and higher levels of entrepreneurship (measured as self-employment). Acs et al. (1994) examined economic and cultural variables as determinants of the level of self-employment across 12 nations. Their results supported a negative relationship between individualism and higher levels of self-employment. Lee and Peterson (2000) suggested that in high collectivistic nations such as China and Mexico, family-based ventures are prevalent. Baum et al. (1993: 510) explained their findings by linking collectivism to the use of social networks and personal contacts in facilitating company start-ups (e.g. through personal loans). The negative relationship between individualism and entrepreneurship has also been supported when TEA is used as the measure of entrepreneurship. Pinillos and Reyes' (2011) results indicated that individualism negatively affected levels of entrepreneurship (TEA) across 52 countries and level of economic development moderated this relationship. Kara, Peterson and Castrogiovanni's (2014) results also support the negative relationship between individualism and entrepreneurship, measured as TEA, across 50 countries.

Following the argument that (1) individuals in an individualistic culture could satisfy their motivational needs, whereas individuals in a collectivistic culture might opt for self-employment to satisfy their motivational needs and (2) individuals in a collectivistic society might have an easier time financing their business by way of borrowing from family, friends and neighbors, I expect a negative relationship between individualism and entrepreneurship levels across regions. Due to conceptual similarity between individualism-collectivism and exclusionism versus universalism, I expect a similar relationship.

**Hypothesis 7a:** The level of individualism will be negatively associated with level of entrepreneurship across regions.

**Hypothesis 7b:** The level of exclusionism will be positively associated with level of entrepreneurship across regions.

*The link between uncertainty avoidance and entrepreneurship* Cultural dimension of uncertainty avoidance determines the expected and accepted behaviors of the individuals in that society as well as how the institutions are set up. My focus is on the implications of the effects of uncertainty avoidance on individual behaviors with regard to the pursuit of self-employment. In high uncertainty avoidant societies, individuals have stronger needs for rules and procedures and tend to stay with a particular organization longer (Hofstede, 2001; Hofstede et al., 2010b). Even though uncertainty avoidance deals with how stressed individuals feel when faced with ambiguous or unknown situations (Hofstede et al., 2010b: 191), it should not be confused with risk avoidance. Risk has a percentage of probability that some event will take place whereas uncertainty means that probabilities cannot be specified; uncertainty is a situation where anything can happen (Hofstede et al., 2010b: 197). The link between uncertainty avoidance and entrepreneurship does not measure the effects of risk tolerance or avoidance.

The cultural dimension of uncertainty avoidance might affect an individual's decision when it comes to pursuing entrepreneurial opportunities (Wennekers, 2006) because of the accepted and expected ways of doing things that are instilled in the individual from birth; individuals might have a hard time making the leap from waged-employment to self-employment in high uncertainty avoidance societies. Empirical evidence supports both a positive and a negative relationship between uncertainty

avoidance and entrepreneurship. For example, Acs et al. (1994) examined the determinants of entrepreneurship (measured as self-employment) across nations. Aside from cultural dimensions, the authors included economic development, changes in industry composition, prevalence of high technology, unemployment and female labor-force participation as determinants of self-employment. Acs et al.'s (1994) results indicated a positive relationship between uncertainty avoidance and entrepreneurship. Similarly, both Hofstede et al. (2004) and Wennekers, Thurik, van Stel and Noorderhaven (2007) found a positive relationship between uncertainty avoidance and entrepreneurship. Both studies stated that individuals in high uncertainty avoidance societies might be dissatisfied with the restrictive climate of employing organizations and individuals are pushed into entrepreneurship resulting in higher levels of entrepreneurship will be higher at the nation level. However, this dissatisfaction explanation applies to a culture profile that is high on power distance, high on uncertainty avoidance, low on masculinity and low on individualism; not just for the relationship between uncertainty avoidance and entrepreneurship. In addition, there is a significant overlap between power distance and uncertainty avoidance for samples that come from Europe (Minkov, 2013).

On the other hand, Shane (1993) examined the link between rates of innovation and Hofstede's cultural dimensions across 33 nations. He argued that individuals in a low uncertainty avoidant society might have a higher degree of tolerance for uncertainty and change, which is necessary for innovation. Shane's (1993) results indicated that across 33 nations, societies that have lower levels of uncertainty avoidance had higher levels of innovation (a negative relationship).

I argue that there is a negative relationship between uncertainty avoidance and entrepreneurship. Individuals choose between being waged-employees and pursuing self-employment by comparing the benefits and risks associated between the two options. For the self-employed, many risks exist with regard to the demand for the product or service the entrepreneur is providing, cost of the product or service and the income (de Wit, 1993; Bhide, 1994). However, it not the risks that are associated with self-employment that individuals in high uncertainty avoidant societies try to avoid but the uncertainty of leaving the security of the organization and waged employment; for individuals raised in a high uncertainty avoidance society, choosing waged employment over self-employment (Wennekers, 2006) is the safer alternative (Iyigun & Owen, 1998). In light of this discussion, I propose

**Hypothesis 8:** The level of uncertainty avoidance will be negatively associated with level of entrepreneurship across regions.

*The link between LTO and entrepreneurship* LTO has not attracted much research interest in international management research (Gelfand et al., 2007; Kirkman et al, 2006; Tsui, Nifadkar & Ou, 2007). Similarly, the cultural dimension that deals with the time aspect (long- versus short-term orientation) has not yet received attention in entrepreneurship research (Hayton et al., 2002; Wennekers, 2006). This lack of attention could be due to the limited availability of LTO scores; the number of countries (n=23) that were included in the Chinese Value Survey Chinese Culture Connection (1987) does not allow for a large-scale comparative analysis and the student samples on which they are based are suspect. Only recently, scores for a larger number of countries became

available (Hofstede, et al., 2010: 195; scores for 76 countries are available) based on the WVS data.

The cultural dimension of LTO affects both what individuals in that society value, how they behave and how the institutions are set up. For example, individuals in long-term oriented societies save more and financial markets thrive or collapse by the quarterly results of firms in short-term oriented societies (Hofstede, 2006). My focus is on the effects of long-term orientation on individual behaviors with respect to entrepreneurship.

Hofstede et al. (2010b) indicated that behaviors that are promoted by LTO support entrepreneurial activity. Individuals in a short-term oriented society tend to pay attention to immediate results; Hofstede et al (2010b) stated that results of the past month, quarter or year is a major concern. However, entrepreneurial businesses take time to develop and become profitable. Individuals in a long-term oriented society will be more likely to engage in entrepreneurial activities because patience and persistence are important attributes for individuals in a long-term oriented society. For an entrepreneur, persistence and tenacity to pursue goals are essential. Since entrepreneurial businesses take time to develop, entrepreneurs must be good planners, as well. Planning with a long-term perspective can be found in societies that are high in long-term orientation. Moreover, entrepreneurs must invest not only money but also time into the development of the business. For individuals living in short-term oriented societies, leisure time is important. Time spend on leisure activities might inhibit the amount of time an entrepreneur must spend to get the business up and running.

Lortie's (2012) examination of the relationship between long-term orientation and entrepreneurship at the nation and region levels is the only empirical example to date.

Lortie (2012) constructed LTO using data from the WVS at the nation and region level and conclude that when entrepreneurship is measured as a percentage of individuals who are self-employed, LTO positively affects the levels of entrepreneurship at both the nation and region levels.

Personal dispositions of individuals in long-term orientation societies allow individuals to be more patient, save more and not value immediate results which in return increase the levels of entrepreneurship in that society.

**Hypothesis 9:** The level of long-term orientation will be positively associated with level of entrepreneurship across regions.

*The link between indulgence versus restraint and entrepreneurship* Even though Minkov's (2007, 2011) indulgence versus restraint dimension is conceptually related to Hofstede's uncertainty avoidance and the concept of tight and loose societies, this dimension is distinct enough to warrant Hofstede (Hofstede et al., 2010b) to add it as the sixth cultural dimension to his model. I propose that the indulgence versus restraint dimension is relevant to the examination of entrepreneurship.

Both cultural tightness and looseness (Gelfand, Nishii & Raver, 2006) and the indulgence versus restraint dimension rest on the assumption that cultural tightness and restraint forces individuals to accept clear and pervasive social norms and to punish or reject any deviations from these norms. The decision to pick self-employment over waged-employment might be viewed as a deviant but acceptable behavior in societies



that endorse indulgence. The social norms might dictate what and the individual is expected to do or where he/she must work, therefore restraining individual's options when it comes to pursuing self-employment. Such a pressure on individuals will exist in a high restraint society but not on individuals in a highly indulgent society.

In addition, in societies where deviant behavior is tolerated, failure might be tolerated as well. If an individual chooses to pursue self-employment but does not succeed, the individual might not lose face or feel embarrassed. Individuals in a highly restraining society might choose waged-employment over self-employment to avoid the embarrassment that comes with failed endeavors. Moreover, individuals in a society that is high on indulgence remember positive emotions, are optimistic and display positive attitudes more than do individuals in a society that is high on restraint (Hofstede et al., 2010b). As a result, individuals in a more indulgent society might forget their failures more easily and pursue other entrepreneurial opportunities in the future.

**Hypothesis 10:** The level of indulgence will be positively associated with level of entrepreneurship across regions.

## **Summary**

This chapter provides the link between context and entrepreneurship at within-county regional level. Drawing from Wennekers' (2006) framework, I posit that institutional, economic, technological and cultural contexts affect potential entrepreneurs' decision to pursue self-employment, affecting aggregate entrepreneurship levels. I propose that after controlling for the effects of legal complexity, social security system and protection of property rights at the nation level, I can account for the effects of

institutional context by examining the effects of institutional characteristics and education level on entrepreneurship at the regional level. The perceptions of institutions could affect the willingness of potential entrepreneurs to pursue self-employment. Education levels could affect both potential entrepreneurs' skill set and the availability of workforce. The level of economic development and unemployment are important economic contextual factors that may affect entrepreneurship. Higher levels of economic development of a region will increase the wages, increasing the opportunity cost of self-employment. On the other hand, the opportunity cost of leaving unemployment will increase the number of potential entrepreneurs in a region. R&D activities and expenditures, as well as widespread use of ICT, are technological factors that might affect the number of entrepreneurship opportunities in the environment. I have identified individualism-collectivism, uncertainty avoidance, LTO, exclusionism versus universalism and indulgence versus restraint cultural dimensions as the most relevant cultural dimensions related to entrepreneurship. Table 2. summarizes my hypotheses.

**Table 2. Summary of Proposed Relationships**

<b>Institutional Context and Entrepreneurship</b>	
1 (+)	The level of institutional trust will be positively associated with level of entrepreneurship across regions.
2 (+)	The level of education will be positively associated with level of entrepreneurship across regions.
<b>Economic Context and Entrepreneurship</b>	
3 (-)	The level of economic development will be negatively associated with level of entrepreneurship across regions.
4 (+)	The level of unemployment will be positively associated with level of entrepreneurship across regions.
<b>Technological Context and Entrepreneurship</b>	
5 (+)	The level of technological development will be positively associated with level of entrepreneurship across regions.

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**Regional culture and entrepreneurship**

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- 6a (+) The level of individualism will be positively associated with level of entrepreneurship across regions.
- 6b (-) The level of exclusionism will be negatively associated with level of entrepreneurship across regions.
- 7a (-) The level of individualism will be negatively associated with level of entrepreneurship across regions.
- 7b (+) The level of exclusionism will be positively associated with level of entrepreneurship across regions.
- 8 (-) The level of uncertainty avoidance will be negatively associated with level of entrepreneurship across regions.
- 9 (+) The level of long-term orientation will be positively associated with level of entrepreneurship across regions.
- 10 (+) The level of indulgence will be positively associated with level of entrepreneurship across regions.
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## **VI. METHODS**

As I have outlined in Chapter One, the purpose of this study is to examine the effects of institutional, technological and cultural contexts on entrepreneurship across regions. I used a cross-sectional design to examine the link between context and entrepreneurship. As highlighted in Chapter Two, I used Wennekers' (2006) framework and recent empirical studies (e.g. Stephan & Uhlaner, 2010; Bosma & Schutjens 2007, 2011) and literature reviews (Hayton et al., 2006; Jones et al., 2011) to identify variables to best represent these contextual factors. I have also expanded on the relationship between these factors and entrepreneurship levels across regions. This chapter provides an overview of the research methods used in this study. The first section describes the operationalization of variables used. The second section outlines the statistical procedures used. The next chapter, Chapter Five, summarizes the results.

### **Data Sources**

The focus of my dissertation is on Europe and the information for the variables used comes from the Eurostat, EVS, ESS, ISSA, GCR and World Bank. Data for the region-level variables were attained from the Eurostat, EVS and ESS. All three sources use EU's regional classification; all the data is coded using EU's NUTS 1, 2 and 3 classification. Data for nation-level control variables were attained from GCR, ISSA, Eurobarometer and the World Bank.

The Eurostat is the statistical office that compiles data on a variety of issues across Europe covering both the member countries and the candidate states since 1989. The Eurostat determines the common methods, structures and technical standards for data collection. Each member and candidate state collects and verifies the data. Then the data is sent to the Eurostat. In other words, the Eurostat procedures ensure that the data is comparable. For example, unemployment is measured the same way in Ireland and Germany that it is measured in Portugal (The European Commission, 2013b).

The EVS was initiated by social and political scientists to explore the moral and social values of the European social and political institutions (The European Values Survey, 2014). It was designed under the leadership of Jan Kerkhofs and Ruud de Moor (Inglehart, 2004). The first wave (1981) included interviewing citizens in 16 countries using a standardized survey. Today, the EVS program defines itself as a large-scale, cross-national and longitudinal survey research program examining family, work, religious, political and societal values (The EVS, 2014). The program allows researchers and policy makers to understand the ideas, beliefs, preferences, attitudes, values and opinions of Europeans. The interviews are conducted every nine years in the respective national languages of each country. The latest wave (2008) covered 47 European countries and over 65,000 people (The EVS, 2014).

The EVS provides integrated data for comparison of beliefs, preferences, attitudes and values. Expert groups were organized to develop a master questionnaire in English. The method documentation of the fourth wave of EVS stated that the questionnaire was translated into other languages using a questionnaire translation system called WebTrans, which is a web-based translation platform designed by Gallup Europe (The EVS, 2014).

A multi-stage random sample was drawn from the adult population of the countries included (18 years old and older). Face-to-face interviews were used and the fieldwork followed uniform instructions prepared by the EVS advisory groups. Even though age and gender representation was of concern, regional representation was not.

The ESS was established in 2001 by Roger Jowell to chart Europe's changing institutions and the attitudes, beliefs and behavior patterns of the citizens of the European Union (The European Social Survey, 2013a). The Core Scientific Team produces detailed project specifications to ensure the same standards are used across nations. The survey has been administered by the national teams every two years since 2001. The 'source questionnaire' is designed in English. A translation team and national teams oversee the translation process to ensure that the questions are functionally equivalent (European Social Survey, 2013b). The Core Scientific Team uses a variety of sampling procedures to ensure that the random samples represent the full range of eligible residential population aged 15+ (European Social Survey, 2013c).

The GCR is an annual report that assesses the drivers of economic performance and competitiveness across 100+ nations. Produced by the Global Competitiveness Network (GCN) of the World Economic Forum, the annual report aims to provide benchmarking tools for business leaders and policy makers to identify obstacles for economic development and competitiveness (Schwab, 2010). The annual reports prior to 2000 reflected Sachs' lead and focused on institutions and economic policies as drivers of global competitiveness (Porter, Sachs, McArthur, 2001). Porter's lead brought a focus on institutions, market structures and economic policies as drivers of national prosperity. The Growth Competitiveness Index and the Current Competitiveness Index reflect

microeconomic and macroeconomic factors that affect national competitiveness.

Business leaders around the world are asked about the aspects of their local business environment by an Executive Opinion Survey. The GCR combines hard data (such as education level or computer use) with executive opinion survey results on a variety of issues including efficiency of government institutions and sophistication of local supplier networks (Porter et al., 2001).

The ISSA administers a Developments and Trends Annual Survey and produces annual reports using both hard and survey data. The data is reported by the social security offices throughout the world. In addition, information is gathered from the ISSA Documentation Service, the legislative database of the International Labor Office, the European Commission, the Organization for Economic Co-operation and Development, the World Bank, the International Monetary Fund and the United Nations Development Programme. International analysts examine the material for factual errors, ambiguous statements and contradictions in material from different sources (ISAA, 2010).

The World Bank Institute collects data on a variety of issues. The Institute uses surveys of firms and individuals and assessments of commercial risk rating agencies, non-governmental organizations and other aid agencies to collect data on governance indicators. Since 1996 the data collection has taken place every two years. According to Kaufman, Kraay and Mastruzzi (2005) 37 separate data sources from 31 different organizations supply information on 209 countries and territories. Governance indicators consist of (1) voice and accountability, (2) political instability and violence, (3) government effectiveness, (4) regulatory quality, (5) rule of law and (6) control of corruption.

Eurobarometer is a tool used by the European Commission to monitor the evaluation of public opinion on a variety of issues including enlargement, social situations, health, culture, information technology and entrepreneurship. The standard Eurobarometer survey has used face-to-face interviews since 1973 (The European Commission, 2014). To attain information on a specific topic, such as entrepreneurship, the European Commission can request a Flash Eurobarometer. The Flash Eurobarometer surveys on entrepreneurship collect information on the entrepreneurial mindset, public attitude on entrepreneurial education, risk-taking, start-ups, obstacles to enterprise and business failures (European Commission, 2007). Directorate-General administers *Eurobarometer Survey on Entrepreneurship* to understand what encourages or discourages people to pursue entrepreneurship. Public attitudes on entrepreneurial education, risk-taking, start-ups and business failures are also examined. The first survey on entrepreneurship was conducted in 2000 with 8200 participants. For the 2007 Flash Eurobarometer survey on entrepreneurship, 18,665 EU citizens were interviewed by phone between 9<sup>th</sup> and 16<sup>th</sup> of January 2007.

### **Sample**

I used data from the fourth wave (2008-2009) of the EVS for the dependent variable, entrepreneurship, at the within-country regional level. Data from the second and third waves of the EVS was used to construct the cultural dimensions of indulgence and restraint and LTO. Third wave of EVS was used to construct exclusionism versus universalism dimension. I have used the fourth wave of the EVS and fourth and sixth waves of ESS to construct individualism-collectivism and uncertainty avoidance (Kaasa



et al., 2014) dimensions. I have also constructed uncertainty avoidance as described by Minkov and Hofstede (2014) using the fifth wave of the ESS. The institutional trust measure was constructed using the third wave of the EVS.

To account for the effect of the environmental context in which potential entrepreneurs decide about their occupational choice (self-employment versus waged employment versus unemployment), I used region level education level, level of economic development, unemployment and technological context variables. Data for these variables comes from Eurostat, GCR, ISSA and the World Bank. Since I used data from 2008-2009 for entrepreneurship figures, I used a three-year average (2005-2007) for the predictors when available.

Control variables consist of regulatory complexity, social security, protection of property rights, availability of financial resources, age distribution and population density. Regulatory complexity, social security, protection of property rights and availability of financial resources are determined by national laws; thus the variations are more meaningful at nation level rather than at regional level. Figures for the control variables are attained from the latest World Bank report on governance and regulatory complexity (Kaufman et al., 2005), 2008 GCR, 2006 and 2008 Social Security Programs throughout the World reports and Eurobarometer. At the region level, I controlled for the effects of population density and age (three-year average, 2005-2007); these figures are attained from the Eurostat and the fourth wave of the EVS respectively. Table 3. details the variables and data sources used.

**Table 3. Variables and Data Sources Used**

	<b>Name</b>	<b>Source</b>	<b>Sample size Number of regions</b>
<b>DV</b> <b>(region level-L1)</b>	entrepreneurship	EVS 4 <sup>th</sup> wave	141 regions
<b>IV</b> <b>(region level-L1)</b>	Individualism-Collectivism	ESS 4 <sup>th</sup> & 6 <sup>th</sup> wave & EVS 4 <sup>th</sup> wave	128 regions
<b>IV</b> <b>(region level-L1)</b>	Uncertainty Avoidance	1. ESS 4 <sup>th</sup> & 6 <sup>th</sup> wave & EVS 4 <sup>th</sup> wave (Kaasa et al., 2014) 2. ESSS 5 <sup>th</sup> wave (Minkov & Hofstede, 2010)	130 regions 107 regions
<b>IV</b> <b>(region level-L1)</b>	Institutional trust 1. Dakhli & De Clercq, 2004 2. Beugelsdijk, 2006	1. EVS 3 <sup>rd</sup> 2. EVS 3 <sup>rd</sup>	134 regions 134 regions
<b>IV</b> <b>(region level-L1)</b>	Long-term orientation	EVS (2 <sup>nd</sup> and 3 <sup>rd</sup> waves)	93 regions
<b>IV</b> <b>(region level-L1)</b>	Indulgence versus Restraint	EVS (EVS 2 <sup>nd</sup> and 3 <sup>rd</sup> waves)	101 regions
<b>IV</b> <b>(region level-L1)</b>	Exclusionism versus Universalism	EVS (EVS 3 <sup>rd</sup> wave)	136 regions
<b>IV</b> <b>(region level-L1)</b>	Education level	EUROSTAT (a three-year average (2005-07))	139 regions
<b>IV</b> <b>(region level-L1)</b>	Level of economic development	EUROSTAT (a three-year average (2005-07))	139 regions
<b>IV</b> <b>(region level-L1)</b>	Unemployment	EUROSTAT (a three-year average (2005-07))	134 regions
<b>IV</b> <b>(region level-L1)</b>	Technological context	EUROSTAT (a three-year average (2005-07))	138, 139, 68 regions
<b>Control</b> <b>(nation level-L2)</b>	Regulatory complexity	WORLD BANK (1996-2004 report)	11 nations
<b>Control</b> <b>(nation level-L2)</b>	Social security	ISSA (average of 2006 and 2008 reports)	11 nations
<b>Control</b> <b>(nation level-L2)</b>	Protection of property rights	GCR (2008 report)	11 nations
<b>Control</b> <b>(nation level-L2)</b>	Availability of financial resources	Eurobarometer Survey on Entrepreneurship (2007 report)	10 nations
<b>Control</b> <b>(region level-L1)</b>	Age	EVS 4 <sup>th</sup> wave	141 regions

<b>Control (region level-L1)</b>	Population density	Eurostat (three-year average (2005-07))	139 regions
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## Variables and Measures

*Entrepreneurship* I followed macro level entrepreneurship research that uses self-employment as a measure of entrepreneurship (Beugelsdijk & Noorderhaven, 2004; Patzelt & Shepher, 2011; Shinnar & Young, 2008; Stephan & Uhlaner, 2010).

Beugelsdijk and Noorderhaven (2004) stated that international and interregional studies of entrepreneurship use self-employment (as expressed by the respondent him- or herself) as an indicator of entrepreneurship. I followed Wennekers (2006) and used percentage of the workforce that is self-employed as identified by the question about employment status in the 4<sup>th</sup> wave (2008-2009) of EVS. The question about employment status asks:

- Are you employed now or not? If yes, about how many hours a week?  
 If more than one job: only for the main job:
- 1 Full time employee (30 hours a week or more)
  - 2 Part time employee (less than 30 hours a week)
  - 3 Self-employed
  - 4 Retired/ pensioned
  - 5 Housewife not otherwise employed
  - 6 Student
  - 7 Unemployed
  - 8 Other

I combined full time employee, part time employee, self-employed and unemployed figures to determine the total workforce. This use is consistent with the Eurostat's definition of an economically active population (the sum of employed and unemployed). I then calculated the percentage of the workforce that is self-employed to

represent entrepreneurship levels across within-country regions. I only included regions with appropriate representation (workforce  $n > 30$ ).

*Institutional trust* Institutional trust reflects the perceived confidence in the institutions in which a potential entrepreneur is embedded. At the macro level, institutional trust or confidence has been measured by using a set of items from the WVS (Dakhli & De Clercq, 2004; Morrone, Tontoranelli & Ranuzzi, 2009). The respondents were asked to express how much confidence they have in several organizations and institutions. I used the third wave of the EVS. Because France and some Greek regions were missing in the third wave, I used the fourth wave of the EVS for these countries. The question is worded as follows:

I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them?

Churches  
Armed Forces  
Education System  
The Press  
Labor Unions  
The Police  
Parliament  
The Civil Services  
Social Security System  
Major companies  
Health Care system  
Justice system  
The EU  
NATO  
The UN

1 a great deal of confidence  
2 quite a lot of confidence  
3 not very much confidence  
4 no confidence at all

I followed the procedure outlined by Dakhli and De Clercq, (2004); I reversed the scales so that the larger values reflect greater institutional trust. The average of all the items reflects institutional trust at the within-country regional level.

I also used Beugelsdijk's (2006) measure of the well-functioning of institutions to evaluate the convergent validity of the institutional trust measure. Beugelsdijk (2006) stated that the single-item measure of interpersonal trust or generalized trust (Knack & Keefer 1997; Dakhli & De Clercq, 2004; Bjørnskov, 2006) actually measures the well-functioning of institutions when aggregated to the nation level. Beugelsdijk (2006) used factor analysis of a variety of indicators that measure the well-functioning of institutions. Items such as contract enforceability, Transparency International's corruption index, black market premium, rule of law, capitalism, social infrastructure, revolutionary coups and the single-item measure of interpersonal or generalized trust loaded on to the same factor. Beugelsdijk (2006) concluded that the single item that has been used to measure interpersonal trust actually measures how well institutions are functioning. The author used the following question and the measure was constructed as the percentage of respondents in each country that chose answer 1. I used the third wave of the EVS for all countries except France and Greece; I used the fourth wave of the EVS for these countries. I used the following question and calculated the percentage of respondents in each within-country region that chose answer 1.

Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?

1. Most people can be trusted
2. Need to be very careful

*Education level* Academic attainment in a region is important for both the supply of potential entrepreneurs and the quality workforce needed for a new venture (Delmar & Davidsson, 2000; Uhlaner & Thurik, 2004; Robinsson & Sexton, 1994). Measures such as the gross enrollment rates for secondary and tertiary education and the average years of education among adults (Uhlaner & Thurik, 2004) have been used to represent the education level at the nation level. To measure the education level of a region, I used data from the Eurostat. I have used two items to capture education level of a region. The first item measures the pupils and students in upper secondary and post-secondary non-tertiary education - as % of the population aged 15-24 years at regional level. The second item measures the number of students in tertiary education- as a percentage of the population aged 20 to 24 years old in the region. I used three-year averages (2005-07) for each item.

*Level of economic development* Level of economic development could affect the demand for goods and services and result in more entrepreneurial opportunities. GDP per capita and GDP growth have been used as a measure of the level of economic development (Kuznets, 1971; Lucas, 1978; Schultz, 1990; Yamada, 1996; Wennekers, 2006). However, GDP growth is not a part of the harmonized methodology of the Eurostat and GDP growth data might not be reliable across regions. I used regional GDP per inhabitant expressed in PPS (purchasing power standards) to eliminate differences in the price levels between countries. The Eurostat states that GDP reflects the total value of all goods and services produced less the value of goods and services used for intermediate consumption in their production. I used a three-year average (2005-07) to calculate the measure of the level of economic development of a region and used a log transformation due to wide distribution.

*Unemployment* Unemployment levels might affect the number of people who have low opportunity cost when deciding between self-employment and unemployment.

Unemployment level is an important factor to consider when examining entrepreneurship (Evans & Leighton, 1989; Meager, 1992; Hamilton, 1989; Hofstede et al., 2004; Wennekers, 2006). I used unemployment figures from the Eurostat. The Eurostat defines unemployed persons as “persons aged 15-74 who were (all three conditions must be fulfilled simultaneously): 1. without work during the reference week; 2. currently available for work; 3. actively seeking work or who had found a job to start within a period of at most three months.” The EU Labor Force survey is used to calculate the percentage of the economically active population (i.e., labor force or sum of employed and unemployed) who is unemployed. I used a three-year average (2005-07) to calculate the measure of unemployment levels.

*Technological context* The technological context of potential entrepreneurs could affect the number of opportunities in the environment. The first item was the ratio of patent applications made directly to the European Patent Office (EPO) or via the Patent Cooperation Treaty and designation the EOP, in the field of high-technology patents per million inhabitant of a region. This item measures the research and development (R&D) activities that result in new knowledge, products, processes and services. The data was attained from Eurostat. The Eurostat states that filed applications are counted according to the year in which they were filed. In addition, if more than one inventor is listed, fractional counting is applied depending on the inventor’s place of residence. The second item was R&D spending. The data was attained from Eurostat and included R&D

spending (Euros per inhabitant) by the business enterprise sector, government sector, higher education sector and private non-profit sector. The third item was the widespread use of ICT measured by the percentage of people who use internet on average at least once a week. I used three-year averages (2005-07) to calculate each item. Even though three items were used, data for all three items were available only for 68 regions. Since HLM deletes missing data during analysis, only 68 regions were included in the examination of the link between technological context and entrepreneurship. I did set up a second analysis that included only patent application and R&D spending.

*Individualism-collectivism* Individualism-collectivism is the most studied cultural dimension. Kaasa and Vadi (2010) and Kaasa, Vadi and Varblane (2013) constructed Hofstede's (1980) individualism-collectivism dimension at the regional level (NUTS2 and NUTS1) using data from the ESS. Later, Kaasa, Vadi and Varblane (2014) made slight changes to their measures and used data from the 4<sup>th</sup> wave of EVS and 4<sup>th</sup> wave of ESS. Yet, Kaasa et al. (2014) did not comment on the fact that EVS uses participants who are 18 years or older and ESS collects data from participants who are 15 years and older.

The authors used two indicators that describe the importance of freedom and individual decisions. The importance of individual initiative is captured by the item that measures the importance of new ideas and being creative. Items measuring the importance of children learning independence, the importance of fun, good time and leisure time were also included. Kaasa et al. (2014) use the following items from ESS:

(1) How much each person is or is not like you: Thinking up new ideas and being creative is important to her/him. She/he likes to do things in her/his own original way (Average on scale 1-6)



- (2) How much each person is or is not like you: Having a good time is important to her/him. She/he likes to "spoil" herself/himself. (Average on scale 1-6)
- (3) How much each person is or is not like you: She/he seeks every chance she/he can to have fun. It is important to her/him to do things that give her/him pleasure. (Average on scale 1-6)
- (4) How much each person is or is not like you: It is important to her/him to make her/his own decisions about what she/he does. She/he likes to be free and not depend on others. (Average on scale 1-6)

In addition, two items from EVS were used.

- (5) Learn at home: independence (share of those, for whom it is important)
- (6) How important in your life: leisure time (Average on scale 1-4)

Kaasa et al. (2014) reverse coded the items so that higher values reflected agreement with the statement. The authors standardized all six items prior to factor analysis. The results of factor analysis show that the latent variable explains 50.89% of variance and the loadings of all six items were .39 or higher.

I used the 4th wave of EVS and fourth wave of the ESS for Austria, Germany, Spain, Greece, Netherlands, Poland, Romania and UK. Since NUTS2 levels were not available for the 4<sup>th</sup> wave of ESS, most recent (6<sup>th</sup>) wave was used for Belgium, France and Italy. I followed Kaasa et al.'s (2014) approach and reverse coded the items to indicate agreement with the statement. I aggregated each item to the regional level and standardized them prior to factor analysis. Factor scores, as opposed to factor based scores, were saved as region-level measure of individualism-collectivism. I then calculated the reliability of the measure.

*Uncertainty avoidance* Kaasa and Vadi (2010) and Kaasa, Vadi and Varblane (2013) constructed Hofstede's (1980) uncertainty avoidance dimension at the regional level using data from the ESS. Kaasa, Vadi and Varblane (2014) made slight changes to their construction of the uncertainty avoidance dimension by using data from the fourth wave of EVS and fourth wave of ESS. However, the conceptualization of this dimension is different from Hofstede's (1980) as well as from Minkov and Hofstede (2014) conceptualization. In addition, Kaasa et al. (2014) did not comment on the fact that EVS uses participants who are 18 years or older and ESS collects data from participants who are 15 years and older. Kaasa et al. (2014) used two indicators reflecting the importance of a secure society, an indicator reflecting the importance of a secure job, two indicators reflecting the importance of trustworthiness, two indicators describing the attitudes towards immigrants and one indicator reflecting the importance of following traditions and customs. I used the following items from the from ESS:

- (1) How much each person is or is not like you: It is important to her/him that the government ensures her/his safety against all threats. She/he wants the state to be strong so it can defend its citizens. (Average on scale 1-6)
- (2) How much each person is or is not like you: It is important to her/him to live in secure surroundings. She/he avoids anything that might endanger her/his safety. (Average on scale 1-6)
- (3) Is country made a worse or a better place to live by people coming to live here from other countries? (Average on scale 0-10; 0-worse, 10-better)
- (4) How much each person is or is not like you: It is important to follow traditions and customs. (Average on scale 1-6)

In addition to the ESS items, the following EVS items were used:

- (5) For you personally, how important do you think each of the following would be if you were choosing a job: A secure job. (in a region, percentage of people who picked this as their choice)

(6) Would you say that most people can be trusted or that you can't be too careful in dealing with people? (in a region, percentage of people who picked "people can be trusted")

I used the 4<sup>th</sup> wave of EVS and fourth wave of the ESS for Austria, Germany, Spain, Greece, Netherlands, Poland, Romania and UK. Due to lack of NUTS2 level data, the 6<sup>th</sup> wave of ESS was used for Belgium, France and Italy. I used the procedure outlined by Kaasa et al. (2014) and I reverse coded items so that the higher values reflect stronger agreement with the statements. I then aggregated each item to the regional level, standardized items and factor analyzed them. Factor scores, as opposed to factor based scores, were saved as region-level measure of uncertainty avoidance dimension. I calculated the reliability of the measure.

Alternatively, Minkov and Hofstede (2014) used the 5<sup>th</sup> wave of ESS to construct the uncertainty avoidance Index (UAI). I used the 5<sup>th</sup> wave for Belgium, Germany, Spain, France, Greece, Netherlands, Poland and UK. The 5<sup>th</sup> wave did not include data for Austria, Romania and Italy. The 6<sup>th</sup> wave of the ESS did not include these items thus UAI for Austria, Romania and Italy was not constructed. Minkov and Hofstede (2014) used three items that are conceptually similar to the three items used by Hofstede (1980). I used the following questions:

- (1) Firstly, I am going to read out a list of statements about how you may have been feeling recently. For each statement I would like you to say how often you have felt like this over the last two weeks. Please use this card.  
- I have felt calm and relaxed. (Average on scale 1-6)
- (2) Using this card, please say to what extent you agree or disagree with each of the following statements about [country] nowadays.  
All laws should be strictly obeyed. (Average on scale 1-5)
- (3) For you personally, how important do you think each of the following would be if you were choosing a job?  
A secure job. (Average on scale 1-5)

I used the procedure outlined by Minkov and Hofstede (2014). I aggregated each item to the regional level and used factor analysis. The factor scores, as opposed to factor based scores, were saved. I calculated reliability of the measure and scores were multiplied by 100 represented the region level uncertainty avoidance index.

*Long-term orientation* I used the LTO measure created by Minkov and Hofstede (2012). Minkov and Hofstede (2012) used items from the 2<sup>nd</sup> and 3<sup>rd</sup> waves of the WVS. I followed Minkov and Hofstede and I used the following items to construct LTO at the regional level:

Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five.

The list included: independence, hard work, feeling of responsibility, imagination, tolerance and respect for other people, thrift (saving money and things), determination (perseverance), religious faith, unselfishness and obedience.

(1) Thrift. (in a region, percentage of people who picked this as their choice)

(2) Determination/perseverance. (in a region, percentage of people who picked this as their choice)

(3) Religious faith (in a region, percentage of people who picked this as their choice).

(4) Which of the following statements best describes your views about parents' responsibilities to their children? (CODE ONE ONLY).

A. Parents' duty is to do their best for their children even at the expense of their own well-being (in a region, percentage of people who picked this as their choice).

B. Parents have a life of their own and should not be asked to sacrifice their own well-being for the sake of their children.

(5) How proud are you to be (Nationality)?

1 Very proud, (in a region, percentage of people who picked this as their choice)

2 Quite proud,

3 Not very proud,

4 Not at all proud.

(6) For each of the following statements I read out, can you tell me how much you agree with each.

One of my main goals in life has been to make my parents proud. Do you

1 agree strongly, (in a region, percentage of people who picked this as their choice)

2 agree,

3 disagree, or

4 disagree strongly?

(7) For each of the following aspects, indicate how important it is in your life.

Service to others.

1 Very important, (in a region, percentage of people who picked this as their choice)

2 Rather important,

3 Not very important,

4 Not at all important.

(8) I make a lot of effort to live up to what my friends expect.

1 Agree strongly, (in a region, percentage of people who picked this as their choice)

2 Agree,

3 Disagree,

4 Strongly disagree.

(9) With which of these two statements do you tend to agree? (CODE ONE ANSWER ONLY).

A. Regardless of what the qualities and faults of one's parents are, one must always love and respect them. (in a region, percentage of people who picked this as their choice)

B. One does not have the duty to respect and love parents who have not earned it by their behavior and attitudes.

(10) Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card. (Read out statements. Code one answer for each statement).

- Divorce. (mean on a 1-10 scale)

Since a mixture of free choice, forced-choice and Likert-type scales (scales ranging between 4 and 10 points) items were used, standardization procedures were not used (Minkov & Hofstede, 2012). Instead, percentage of respondents who picked specific responses was calculated for each region as indicated next to each item used. Minkov and Hofstede (2012) factor analyzed 10 items. The results of the factor analysis indicated that 10 items loaded on to two factors. All 10 items were kept to partial out the variance due

to individualism and factor scores were saved. To construct LTO at regional level, I used the 2<sup>rd</sup> and 3<sup>th</sup> waves of the EVS and followed the procedure outlined by Minkov and Hofstede (2012). I first aggregated the items to the regional level then I factor analyzed the items, calculated reliability and used factor scores, as opposed to factor based scores, to represent the long-term orientation dimension. I then calculated reliability of the measure.

*Exclusionism versus universalism* Hofstede et al. (2010b) interpreted the exclusionism versus universalism dimension as a variant of Hofstede's individualism-collectivism dimension and used items from the WVS to contrast exclusionism versus universalism dimension. Same questions were asked by the EVS and I used the following items to construct the exclusionism versus universalism dimension at regional level:

- (1) On this list are various groups of people. Could you please sort out any that you would not like to have as neighbors?  
-Other Race (in a region, percentage of people who picked this as their choice)
- (2) On the whole, men make better political leaders than women do  
1 agree strongly, (in a region, percentage of people who picked this as their choice)  
2 agree,  
3 disagree,  
4 strongly disagree.
- (3) With which of these two statements do you tend to agree?  
A. Regardless of what the qualities and faults of one's parents are, one must always love and respect them. (in a region, percentage of people who picked this as their choice)  
B. One does not have the duty to respect and love parents who have not earned it by their behavior and attitudes.

Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important?  
Please choose up to five.

The list included: independence, hard work, feeling of responsibility, imagination, tolerance and respect for other people, thrift (saving

money and things), determination (perseverance), religious faith, unselfishness and obedience.

(4) Tolerance and respect for other people (in a region, percentage of people who picked this as their choice)

(5) If someone says a child needs a home with both a father and a mother to grow up happily, would you tend to agree or disagree?

Tend to disagree

Tend to agree (in a region, percentage of people who picked this as their choice)

(6) Do you think that a woman has to have children in order to be fulfilled or is this not necessary?

Not necessary (in a region, percentage of people who picked this as their choice)

Needs children (in a region, percentage of people who picked this as their choice)

I used the 3<sup>rd</sup> wave (1999-2001) of the EVS to construct the exclusionism versus universalism dimension for the regions of Austria, Belgium, Germany, Italy, Netherlands, Poland, Romania, Spain and UK. Data for France and Greece was not compiled due to missing items and/or low sample size. I first aggregated these items to the regional level. Then, I factor analyzed the items, calculated the reliability of the measure and used the factor score, as opposed to factor based scores, as the measure of exclusionism versus universalism at the regional level.

*Indulgence versus restraint* This bipolar dimension deals with relatively free actions of a person to engage in spending money and indulging in leisurely and fun activities with friends or alone (Hofstede et al., 2010b). Hofstede et al. (2010b) used items from the WVS and same questions were asked by the EVS. I used the following items from the EVS to construct indulgence versus restraint dimension at the regional level:

(1) Taking all things together, would you say you are Very happy (in a region, percentage of people who picked this as their choice)

Quite happy

Not very happy

Not happy at all

(2) Some people feel they have completely free choice over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means 'not at all' and 10 means 'a great deal' to indicate how much freedom of choice and control you feel you have over the way your life turns out. (mean on a 1-10 scale)

(3) Please say, for each of the following, how important it is in your life:

Leisure time. (other choices were: family friends, leisure time, politics, work, religion, service to others)

1 Very important, (in a region, percentage of people who picked this as their choice)

2 Rather important,

3 Not very important,

4 Not at all important.

Hofstede et al. (2010b) stated that the scores were calculated after averaging each country's score from two different WVS waves (1995-2005 and 2005-2008). If a country is studied only once, then a single score for each item was used. Afterward, items were aggregated to nation level and average country scores for the three items were factor-analyzed. The factor scores were converted into scores on a 0-100 scale.

I followed Hofstede et al. (2010b) and used 2<sup>nd</sup> and 3<sup>rd</sup> waves of the EVS for the regions of Austria, Belgium, Germany, Italy, Netherlands, Poland, Romania, Spain and UK. Due to missing data and/or low sample size the indulgence versus restraint dimension for the regions of France and Greece was not calculated. I aggregated each item to the regional level; if a region was studied only once, a single score was used. Average region scores for the three items were factor-analyzed and factor scores, as opposed to factor based scores, were saved. I then calculated reliability of the measure and converted into 0-100 scale scores.



*Regulatory complexity* Bowen and De Clercq (2008: 752) defined regulatory complexity as the “paperwork and administrative formalities that entrepreneurs must confront.” I used the World Bank’s (Kaufman et al., 2005) measure of “regulatory burden” to proxy for regulatory complexity at the nation level. This measure also correlates highly with GEM’s regulatory complexity measure (Bowen & De Clercq, 2008). I used the latest report covering 1996-2004 to calculate regulatory complexity. The data was obtained from <http://search.worldbank.org/all?qterm=regulatory+burden&title=&filetype=>

*Social security* Laborde (2005) and Paskalia (2009) emphasized that even though the European Union has undergone extensive unification efforts, social security is one area that still requires significant attention. Since countries have their own social security programs and coverage/contribution for disability, sickness and maternity, work injuries, unemployment and family allowance is different, the social security system must be captured at the nation level. In addition, different amounts are contributed by the employee, the employer and the government. I followed Hessels et al. (2008a, 2008b) and Wennekers (2006) and used social security contribution rate, which is the total compulsory social security contribution by the employer and the employee, attained from the ISSA. I used the average of 2006 and 2008 reports to calculate the social security contributions at nation level.

*Protection of property rights* I followed Desai et al. (2003) and used the GCR's property rights measure. I used the 2008 figures since this is the first year figures for property protection were available. The GCR utilized the following two items to create property rights index in 2008:

(1) Property rights in your country, including over financial assets, are

1 = poorly defined and not protected by law,

7 = clearly defined and well protected by law.

(2) Intellectual property protection and anti-counterfeiting measures in your country are

1 = weak and not enforced,

7 = strong and enforced.

*Availability of financial resources* To control the effects of the availability of financial resources, I used the Eurobarometer Survey on Entrepreneurship 2007 report. A total of 20,674 people were interviewed by phone. Respondents were 15 years or older. The master survey was prepared in English and then translated to the respective national language by the agency conducting the interview. For example, Gallup Europe conducted the interviews in Belgium, Saar Poll conducted the interviews in Estonia and Metroanalysis conducted interviews in Greece. The full list of countries and agencies in charge of translation and conducting interviews can be found in the 2007 report.

*Age* The age composition of the population has received attention in entrepreneurship literature. Delmar and Davidsson (2000) showed that the age group between 25 and 35 has higher levels of entrepreneurship. I have used the average age for each region to control for the effect of age.

*Population density* According to Wennekers (2006) higher population density could result in higher levels of retail, trade, repair and personal services. Opportunities for networking, economies of scale and for the emergence of new industries are higher in urban areas (Audretsch & Keilbach, 2004). To account for the effects of population density, I included a region level population density measure (total population divided by the surface area) from the Eurostat and used a three-year average (2005-07).

### Summary of Variables and Measures

In my study, I used entrepreneurship levels across regions as my dependent variable. Independent variables consisted of institutional trust, education, GDP, unemployment, patent applications, R&D investment, internet access, individualism-collectivism, uncertainty avoidance, exclusionism versus universalism, indulgence versus restraint and LTO orientation. Control variables at the regional level were age and population density, whereas control variables at the nation level were regulatory complexity, social security, protection of property rights and availability of financial resource. Indicators for the measures constructed are listed in Table 4.

**Table 4. Indicators Used for the Measures Constructed**

Concept	Indicator	Source	How it is asked in the original survey and coded
<b>Institutional Trust</b>	Confidence: Churches	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: Armed Forces	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: Education System	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: The Press	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: Labour	<b>EVS</b>	how much confidence you have (mean on a

	Unions		1-4 scale)
	Confidence: The Police	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: Parliament	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: The Civil Services	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: Social Security System	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: Major Companies	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: Health Care System	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: Justice System	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: The European Union	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: NATO	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
	Confidence: The United Nations	<b>EVS</b>	how much confidence you have (mean on a 1-4 scale)
<b>Institutional Trust 2</b>			
	Trust	<b>EVS</b>	people can be trusted/can't be too careful (share of "people can be trusted")
<b>IND-COL</b>			
	important: make own decisions	<b>ESS</b>	important to make own decisions and be free (mean on a 1-6 scale)
	important: new ideas and be creative	<b>ESS</b>	important to think new ideas and being creative (mean on a 1-6 scale)
	important: seek fun	<b>ESS</b>	important to seek fun and things that give pleasure (mean on a 1-6 scale)
	important: have a good time	<b>ESS</b>	important to have a good time (mean on a 1-6 scale)
	important in life: leisure time	<b>EVS</b>	how important in your life: leisure time (mean on a 1-4 scale)
	learn children independence	<b>EVS</b>	learn children at home: independence (share of those who indicate "important")
<b>UA</b>			
	importance of job security	<b>EVS</b>	important in a job (share of those who mention "job security")
	people can be trusted	<b>EVS</b>	people can be trusted/can't be too careful (share of "people can be trusted")
	important: strong government and safety	<b>ESS</b>	important that government is strong and ensures safety (mean on a 1-6 scale)
	important: secure and safe surroundings	<b>ESS</b>	important to live in secure and safe surroundings (mean on a 1-6 scale)
	important: follow traditions and customs	<b>ESS</b>	important to follow traditions and customs (mean on a 1-6 scale)
	immigrants make the country a better place	<b>ESS</b>	immigrants make country better (vs worse) place to live (mean on a 0-10 scale)
<b>UA (M&amp;H)</b>			
	Calm and relaxed	<b>ESS</b>	Have felt calm and relaxed last 2 weeks (mean on a 1-6 scale)
	Laws should be obeyed	<b>ESS</b>	All laws should be strictly obeyed (mean on a 1-5 scale)

	Important: secure job	<b>ESS</b>	Important: job is secure (mean on a 1-5 scale)
<b>INDULGENCE vs. RESTRAINT</b>			
	Important: leisure time	<b>EVS</b>	important in life: Leisure time (share of those who indicate “very important”)
	Feeling of happiness	<b>EVS</b>	Would you say you are (share of those who indicate “very happy”)
	Freedom of choice	<b>EVS</b>	much freedom of choice and control you feel you have over the way your life turns out (mean on a 1-10 scale)
<b>EXCLUSIONSIM vs. UNIVERSALISM</b>			
	Respect and love for parents	<b>EVS</b>	Which of these two statements do you tend to agree with (share of those who agreed with “Regardless of what the qualities and faults of ones parents are, one must always love and respect them”)
	Qualities in Children: Tolerance and respect for other people	<b>EVS</b>	Which, if any, do you consider to be especially important? (share of those who mention “Tolerance and respect for other people”)
	Like to have as neighbors: Other Race	<b>EVS</b>	You would not like to have as neighbors (share of those who mentioned “other race”)
	Child needs a home with father and mother	<b>EVS</b>	A child needs a home with both a father and a mother to grow up happily (share of those who agree with the statement)
	Woman has to have children	<b>EVS</b>	A woman has to have children in order to be fulfilled (share of those who agree with the statement)
<b>LTO</b>			
	Respect and love for parents	<b>EVS</b>	Which of these two statements do you tend to agree with (share of those who agreed with “Regardless of what the qualities and faults of ones parents are, one must always love and respect them”)
	Thrift	<b>EVS</b>	Which qualities are especially important for children to have? (share of those who mentioned “thrift”)
	Perseverance	<b>EVS</b>	Which qualities are especially important for children to have? (share of those who mentioned “perseverance”)
	Religious faith	<b>EVS</b>	Which qualities are especially important for children to have? (share of those who mentioned “religious faith”)
	Parents do their best	<b>EVS</b>	Parents' duty is to do their best for their children even at the expense of their own well-being (share of those who agreed with the statement)
	National pride	<b>EVS</b>	How proud of nationality (share of those who indicate “very proud”)
	Divorce justifiable	<b>EVS</b>	Please tell me whether you think [divorce] can always be justified, never be justified or something in between ( mean on a 1-10 scale)

## **Statistical Procedures**

After I gathered data from the sources outlined in the previous section, I analyzed the data to construct measures, check reliability and test hypotheses. Following previous research, I have used factor analysis to determine the factor structure of the institutional trust measure and cultural dimensions. The cut-off value of .5 was used when examining the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Eigenvalues > 1 criteria was used to determine number of factors for the cultural dimensions. Factor scores, as opposed to factor based scores, were saved as cultural dimensions and the mean across items was used to construct institutional trust measure. Cronbach's alpha was calculated for each measure (Cronbach, 1951).

Since some of the variables (e.g. institutional complexity) show more variation across countries than across regions, hypothesized region-level relationships must be tested after controlling for the effects of those nation-level variables. I used HLM 6.0 (Raudenbush & Bryk, 2002) to examine the hypothesized relationships.

I prepared two datasets to be inputted into HLM. The first dataset contained independent, dependent and control variables at the regional level (level 1). The second dataset contained nation level (level 2) control variables (regulatory complexity, social security, protection of property rights and the availability of finance). Since the second level sample size was very small, the accuracy of the estimates may come into question. A minimum of 20 level-one observations for 50 level-two groups has been suggested for examination of cross level interactions (Hox, 1998). More recently, adequate sample size requirements for multilevel analysis has been examined by simulations (Busing, 1993; Maas & Hox, 2005; Van der Leeden & Busing, 1994; Van der Leeden, Busing & Meijer,

1997). Results indicated that no bias was observed in the estimates of the fixed effects but the standard errors used to estimate significance levels were not stable (Clarke & Wheaton, 2007; Mass & Hox, 2004, 2005).

Maas and Hox (2005) performed the most comprehensive simulation. Their results showed that even with small level-two sample sizes (as small as 10) and level-1 (as small as 5), regression coefficients and variance components at level-one were estimated without bias. However, large (up to 25%) biases were observed in level-two variance components and regression coefficients. Since I am interested in level-one relationships and use level two variables only as controls, low level-two sample size is not an issue. In other words, since I am only hypothesizing about region level (level-one) relationships, small level-two sample size ( $n=11$ ) will not affect my conclusions.

The restricted maximum likelihood estimation (RLM) method was used. Raudenbush & Bryk (2002) indicated that when the level two sample size is small, RML should lead to better estimates of the variance components. I started my analyses by running a null model to examine the variance in entrepreneurship that resides between regions and between countries. Since there are no level-one or level-two predictors in the null model, all of the within group variance in the outcome is forced into the level-1 residual which represents the variance in entrepreneurship levels across regions. For hypotheses testing, I entered variables as grand mean centered (as suggested by Hofmann and Gavin (1998)) which minimizes multicollinearity (Kreft, De Leeuw & Aiken, 1995). I have entered first- and second-level control variables when examining the direct effects of contextual factors on entrepreneurship levels.

## Measure Construction

*Entrepreneurship* Aside from self-report of individuals surveyed by the EVS and ESS, there is no government agency that reports self-employment numbers. To check if individuals who were surveyed by the EVS answered “what is your employment status” question truthfully, I have done two additional analyses. First, I checked the correlation between region level unemployment figures provided by the Eurostat and EVS. To match the time periods, I used 2008 and 2009 average unemployment rates provided by Eurostat and calculated the unemployment rate (percentage of workforce that is unemployed) using the fourth wave of the EVS. The correlation between the EVS (4<sup>th</sup> wave) unemployment rate and the Eurostat unemployment rate was .56 ( $p < .01$ ) across 134 regions (unemployment data for some of the regions of Italy was not available through Eurostat). Second, I constructed a nation-level check to further check the validity of the dataset. I calculated self-employment rates using Eurostat’s Labor Force Survey (Eurostat, 2014) and 4<sup>th</sup> wave of EVS. Across 33 nations (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Macedonia, GB) the correlation was .70 ( $p < .001$ ).

*Institutional trust* I constructed institutional trust measure following Dakhli and De Clercq (2004). I included only the regions with an adequate sample size ( $n \geq 30$ ). The Kaiser-Meyer-Olkin (KMO) measure was above 0.5, thus acceptable. The inter-item correlations and result of the factor analysis for institutional trust measure are shown in



Tables 5 and 6, respectively. Due to low and negative loadings, I have allowed the factor analysis to form two factors and included only the items that had loadings higher than .4 and did not have cross-loadings; the result of two-factor solution is shown in Table 7. Seven items were identified; the Cronbach's alpha for this 7-item measure is .86 and factor analysis result of the seven-item institutional trust is in Table 8.

The second measure of institutional trust was constructed by following Beugelsdijk (2006). The correlation between the two institutional trust measures is shown in Table 9.

**Table 5. Item Means, Standard Deviations and Inter-Item Correlations for Institutional Trust Measure**

Items	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Confidence: Churches <sup>a</sup>	2.49	.39	1														
2. Confidence: Armed Forces <sup>a</sup>	2.65	.33	.47**	1													
3. Confidence: Education System <sup>a</sup>	2.84	.26	.19*	.10	1												
4. Confidence: The Press <sup>a</sup>	2.24	.24	.13	-.28**	.41**	1											
5. Confidence: Labour Unions <sup>a</sup>	2.17	.21	-.26**	-.25**	.33**	.59**	1										
6. Confidence: The Police <sup>a</sup>	2.69	.21	-.05	.16	.24**	-.01	.24**	1									
7. Confidence: Parliament <sup>a</sup>	2.27	.23	-.29**	-.21**	.16	.36**	.48**	.51**	1								
8. Confidence: The Civil Services <sup>a</sup>	2.31	.21	-.33**	-.04	.31**	.09	.37**	.55**	.69**	1							
9. Confidence: Social Security System <sup>a</sup>	2.49	.29	-.47**	-.41**	.37**	.29**	.43**	.27**	.63**	.68**	1						
10. Confidence: Major Companies <sup>c</sup>	2.24	.28	-.05	-.18	.44**	.33**	.41**	.47**	.48**	.61**	.30**	1					
11. Confidence: Health Care System <sup>b</sup>	2.69	.30	-.33**	-.25**	.66**	.26**	.43**	.15	.38**	.54**	.79**	.35**	1				
12. Confidence: Justice System <sup>b</sup>	2.41	.23	-.10	.15	.31**	.04	.28**	.57**	.47**	.40**	.32**	.09	.31**	1			
13. Confidence: The EU <sup>b</sup>	2.36	.26	.28**	-.16	-.15	.31**	.01	.15	.30**	.15	.11	.32**	-.19*	-.13	1		
14. Confidence: NATO <sup>a</sup>	2.35	.27	.04	.15	.18*	.23**	.39**	.38**	.34**	.43**	.06	.68**	.05	.02	.29**	1	
15. Confidence: The United Nations <sup>b</sup>	2.48	.25	.08	.11	.18*	.24**	.36**	.44**	.38**	.44**	.08	.73**	.04	.04	.45**	.86**	1

a n=135; b n=136; c=91

\*\*\* p&lt;.001; \*\* p&lt;.01; \* p&lt;.05; + p&lt;.1 (2-tailed)

**Table 6. Results of Factor Analysis of Institutional Trust**

Indicator	N=134
Confidence: Churches	-0.19
Confidence: Armed Forces	-0.04
Confidence: Education System	0.80
Confidence: The Press	0.52
Confidence: Labour Unions	0.69
Confidence: The Police	0.69
Confidence: Parliament	0.81
Confidence: The Civil Services	0.87
Confidence: Social Security System	0.77
Confidence: Major Companies	0.70
Confidence: Health Care System	0.74
Confidence: Justice System	0.56
Confidence: The European Union	0.24
Confidence: NATO	0.55
Confidence: The United Nations	0.61
KMO Measure of Sampling Adequacy	0.79
Variance explained (%)	39.94

**Table 7. Two-factor Factor Analysis of Institutional Trust**

Indicator	N=135	
Confidence: Churches	-.19	.61
Confidence: Armed Forces	-.04	.15
Confidence: Education System	.80	-.36
Confidence: The Press	.52	.13
Confidence: Labour Unions	.69	-.04
Confidence: The Police	.69	.20
Confidence: Parliament	.81	.06
Confidence: The Civil Services	.87	-.03
Confidence: Social Security System	.77	-.42
Confidence: Major Companies	.70	.39
Confidence: Health Care System	.74	-.56
Confidence: Justice System	.56	-.44
Confidence: The European Union	.24	.70
Confidence: NATO	.55	.63
Confidence: The United Nations	.61	.67
KMO Measure of Sampling Adequacy	0.79	
Variance explained (%) Total: 58.19	39.79	18.33

**Table 8. Results of Factor Analysis of 7-item Institutional Trust Measure**

Indicator	N=135
Confidence: Education System	.79
Confidence: The Press	.57
Confidence: Labour Unions	.69
Confidence: The Police	.71
Confidence: Parliament	.83
Confidence: The Civil Services	.85
Confidence: Major Companies	.72
KMO Measure of Sampling Adequacy	0.78
Variance explained (%)	54.94

**Table 9. Correlation between the Two Institutional Trust Measures**

Measure	Mean	s.d.	1	2
1 Institutional Trust	2.41	0.16	1	
2 Institutional Trust (Beugelsdijk, 2006)	25.42	17.93	0.24**	1

n=134

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

*Individualism-collectivism* To construct the individualism-collectivism dimension, I used only the regions that have adequate representation ( $n \geq 30$ ). Following Kaasa et al. (2014), Kaasa et al. (2013) and Kaasa and Vadi (2010), I reverse coded items so that higher values reflected agreement with the statement; reverse coded items are indicated with (R) in Tables 10, 11 and 12. Then, I aggregated the items to the regional level and conducted factor analysis. Table 10 shows item means, deviations and inter-item correlations of items used and Table 11 shows the results of the factor analysis for individualism-collectivism dimension. The Cronbach's alpha for this measure was .56 across 128 regions. Further analysis indicated that elimination of item #5 and #6 increased alpha to .71 and variance explained to 54.53. Table 12 shows the factor analysis for the four-item measure. The correlation between the four-item and six-item

construction of individualism and collectivism dimension was .99 ( $p < .01$ ) across 128 regions.

**Table 10. Item Means, Standard Deviations and Inter-Item Correlations for Individualism-Collectivisms Dimension**

	Mean	s.d.	1	2	3	4	5	6
1 important: make own decisions <sup>a</sup> (R)	4.81	.26	1					
2 important: new ideas and be creative <sup>a</sup> (R)	4.42	.23	.53**	1				
3 important: seek fun <sup>a</sup> (R)	3.95	.42	.41**	.51**	1			
4 important: have a good time <sup>a</sup> (R)	4.06	.50	.08	.28**	.49**	1		
5 important in life: leisure time <sup>b</sup> (R)	43.60	16.63	.03	.06	-.05	-.04	1	
6 learn children independence <sup>b</sup>	3.25	.33	-.01	-.09	.18*	.01	.25**	1

a n=128

b n=135

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ; +  $p < .1$  (2-tailed)

**Table 11. Results of Factor Analysis of Individualism-Collectivism (6-item)**

Indicator	N=128
important: important: make own decisions (R)	0.69
important: new ideas and be creative (R)	0.81
important: seek fun (R)	0.84
important: have a good time (R)	0.58
important in life: leisure time (R)	0.08
learn children independence	0.02
KMO Measure of Sampling Adequacy	0.57
Variance explained (%)	36.40

**Table 12. Results of Factor Analysis of Individualism-Collectivism (4-item)**

Indicator	N=128
important: important: make own decisions (R)	0.70
important: new ideas and be creative (R)	0.81
important: seek fun (R)	0.84
important: have a good time (R)	0.58
KMO Measure of Sampling Adequacy	0.65
Variance explained (%)	54.53

*Uncertainty avoidance* To construct the two uncertainty avoidance dimensions, I used only the regions that have adequate representation (n>30). For the first measure of uncertainty avoidance measure, I followed Kaasa et al. (2014), Kaasa et al. (2013) and Kaasa and Vadi (2010). I reverse coded the items so that higher values reflected agreement with the statement. The reverse coded items are noted with an (R) in Tables 13 and 14. Then, I aggregated items to the regional level and factor analysed aggregated items. Table 13 shows item means, standard deviations and inter-item correlations and Table 14 shows the results of the factor analysis for the Kaasa et al.'s (2014) uncertainty avoidance construction. I have dropped the items that load lower than .4. Table 15 shows the second factor analysis using the 4-items retained. I reverse coded the negatively loading items before calculating the alpha; the Cronbach's alpha for this measure was .47 across 130 regions. The low alpha indicates lack of internal consistency. The next step will be to contact Kaasa and coauthors to find an alternative solution.

**Table 13. Item Means, Standard Deviations and Inter-Item Correlations for Uncertainty Avoidance Dimension**

		Mean	s.d.	1	2	3	4	5	6
1	importance of job security <sup>a</sup>	60.16	22.14	1					
2	people can be trusted <sup>a</sup>	32.94	14.57	-.15	1				
3	important: strong government and safety <sup>b</sup> (R)	4.70	.36	.16	-.38**	1			
4	important: secure and safe surroundings <sup>b</sup> (R)	4.66	.35	.16	-.43**	.85**	1		
5	important: follow traditions and customs <sup>b</sup> (R)	4.33	.42	.49**	-.22*	.59**	.66**	1	
6	immigrants make the country a better place <sup>b</sup> (R)	6.16	.79	-.21*	-.19	.24*	.23**	-.08	1

a n=135

b n=130

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

**Table 14. Results of Factor Analysis of Uncertainty Avoidance**

Indicator	N=130
importance of job security	0.38
people can be trusted	-0.56
important: strong government and safety (R)	0.88
important: secure and safe surroundings (R)	0.92
important: follow traditions and customs (R)	0.80
immigrants make the country a better place (R)	0.22
KMO Measure of Sampling Adequacy	0.68
Variance explained (%)	49.21

**Table 15. Results of Factor Analysis of Uncertainty Avoidance**

Indicator	N=130
people can be trusted	-0.56
important: strong government and safety (R)	0.90
important: secure and safe surroundings (R)	0.94
important: follow traditions and customs (R)	0.78
KMO Measure of Sampling Adequacy	0.71
Variance explained (%)	65.74

A second measure for the uncertainty avoidance dimension was constructed following Hofstede and Minkov (2010b). Item correlations are shown in Table 16 and the result of the factor analysis is shown in Table 17. The negatively loading item was reverse coded before it was entered into reliability analysis. The Cronbach's alpha for this uncertainty avoidance measure is .49. Again low alpha is a concern and I have aggregated all ESS (fifth wave) items to the regional level to examine other items that correlate highly with the three original items and have conceptual relevance to the uncertainty avoidance measure. Even though several items correlated highly, adding correlated items to the analysis did not increase the alpha for this measure. The correlation between the two uncertainty avoidance measures is .56 ( $p < .01$ ,  $n=101$ ).

**Table 16. Item Means, Standard Deviations and Inter-Item Correlations for  
Uncertainty Avoidance (Minkov & Hofstede, 2013)**

		Mean	s.d.	1	2	3
1	Calm and relaxed	2.92	.24	1		
2	Laws should be obeyed	2.13	.23	-.40**	1	
3	Important: secure job	4.44	.25	.16	-.16	1

n=107

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

**Table 17. Results of Factor Analysis of Uncertainty Avoidance  
(Minkov & Hofstede, under review)**

Indicator	N=107
Calm and relaxed	0.79
Laws should be obeyed	-0.79
Important: secure job	0.51
KMO Measure of Sampling Adequacy	0.56
Variance explained (%)	50.24

*Indulgence versus restraint* The indulgence versus restraint dimension was constructed following Minkov and Hofstede (2014). Once again, I used only the regions with adequate representation ( $n \geq 30$ ). The means, standard deviations, and inter-item correlations are shown in Table 18 and result of factor analysis is shown in Tables 19.

**Table 18. Item Means, Standard Deviations and Inter-Item Correlations for  
Indulgence versus Restraint Dimension (3-item)**

		Mean	s.d.	1	2	3
1	Important: leisure time <sup>a</sup>	36.12	10.92	1		
2	Feeling of happiness <sup>b</sup>	26.12	13.02	.61**	1	
3	Freedom of choice <sup>a</sup>	6.67	.58	.24**	.15	1

a n=138

b n=136

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)



**Table 19. Results of Factor Analysis of Indulgence vs. Restraint (3-item)**

Indicator	N=137
Important: leisure time	0.88
Feeling of happiness	0.85
Freedom of choice	0.47
KMO Measure of Sampling Adequacy	0.53
Variance explained (%)	57.11

Even though the loadings of the items are above .4, the Cronbach's alpha for this measure was .57. Low alpha indicates issues with internal consistency of the measure. To examine other items that can be included in this measure, I aggregated all the EVS items to the regional level. I have examined the conceptual relevance of the correlated items to the indulgence and restraint dimension. Leisure time and happiness are important concepts for this dimension. Hofstede et al. (2010b) stated that this dimension is also related to high importance of having friends. Examination of correlations and conceptual relevance between the items indicated that the addition of the following item increases Cronbach's alpha (from .57 to .71.)

- I'm going to ask how often you do certain things. For each activity, would you say you do them every week or nearly every week; once or twice a month; only a few times a year; or not at all?
- Spend time with friends
  - 1 Every week
  - 2 Once or twice a month
  - 3 Only a few times a year
  - 4 Not at

Tables 20 shows item means, standard deviations and inter-item correlations and Table 21 shows result of factor analysis for the four-item measure. The correlation between this new 4-item measure and the original 3-item measure is .96 ( $p < .01$ ) across 102 regions.

**Table 20. Item Means, Standard Deviations and Inter-Item Correlations for Indulgence versus Restraint Dimension (4-item)**

		Mean	s.d.	1	2	3	4
1	Important: leisure time <sup>a</sup>	36.13	10.92	1			
2	Feeling of happiness <sup>b</sup>	26.12	13.02	.61**	1		
3	Freedom of choice <sup>a</sup>	6.67	.58	.24**	.14	1	
4	Spend time with friends <sup>c</sup>	55.06	15.67	.59**	.48**	.26**	1

a n=138

b n=136

c n= 104

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

**Table 21. Results of Factor Analysis of Indulgence vs. Restraint (4-item)**

Indicator	N=104
Important: leisure time	0.89
Feeling of happiness	0.86
Freedom of choice	0.42
Spend time with friends	0.78
KMO Measure of Sampling Adequacy	0.66
Variance explained (%)	58.05

*Exclusionism versus universalism* The exclusionism versus universalism dimension was constructed following Minkov (2011). Once again, I used only the regions with adequate representation ( $n \geq 30$ ). Even though Minkov used six items to create this dimension, one question (whether men make better political leaders than women) was not asked in the EVS. Even though missing one item can affect the loadings and variance explained, five remaining items loaded on one factor and had high reliability. The results of the item means, standard deviations and inter-item correlations for the remaining five items and factor analysis are reported in Tables 22 and 23. Negative loading item was reverse coded before it was entered into the reliability analysis; the Cronbach's alpha for this measure was .80.

**Table 22. Item Means, Standard Deviations and Inter-Item Correlations for Exclusionism versus Universalism Dimension**

	Mean	s.d.	1	2	3	4	5
1 Always love and respect parents	72.60	16.58	1				
2 Qualities in Children: Tolerance and respect for other people	77.02	12.89	-.30**	1			
3 Like to have as neighbors: Other Race	10.68	8.18	.40**	-.16	1		
4 Child needs both parents	86.08	12.72	.64**	-.41**	.36**	1	
5 Women have to have children	52.79	24.71	.73**	-.46**	.27**	.77**	1

n=136

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

**Table 23. Results of Factor Analysis of Exclusionism versus Universalism**

Indicator	N=136
Always love and respect parents	0.85
Qualities in Children: Tolerance and respect for other people	-0.59
Like to have as neighbors: Other Race	0.52
Child needs both parents	0.88
Woman has to have children	0.90
KMO Measure of Sampling Adequacy	0.76
Variance explained (%)	58.06

*LTO* I followed Minkov (2011) (and Minkov and Hofstede (2012)) and set out to use ten items to construct the LTO dimension. However, there are three items that were not used in the EVS: make parents proud, service to others and live up to expectations of friends. I used only the regions with adequate representation ( $n \geq 30$ ) for my analysis. The means, standard deviations and item correlation and factor analysis results for the remaining seven items are shown in Tables 24 and 25.

Factor loadings of the dimension was not similar to Minkov's (2011) or Minkov and Hofstede's (2012) analyses. It is possible that missing items changed the loadings. In addition, Minkov's conceptualization specifies that LTO dimension must be captured after variance that is due to individualism-collectivism is accounted for.

**Table 24. Item Means, Standard Deviations and Inter-Item Correlations for LTO**

		Dimension								
		Mean	s.d.	1	2	3	4	5	6	7
1	Thrift	35.29	10.04	1						
2	Perseverance	33.23	9.81	.35**	1					
3	National Pride	42.07	18.00	.22**	-.34**	1				
4	Religious faith	27.34	16.52	.07**	-.46**	.61**	1			
5	Parents do their best	71.02	10.08	-.32**	-.63**	.32**	.47**	1		
6	Divorce justifiable	5.28	.84	-.31**	.35**	-.58**	-.76**	-.44**	1	
7	Love parents	71.93	16.59	.27**	-.26**	.64**	.62**	.43**	-.63**	1

n=109

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

**Table 25. Results<sup>a</sup> of Factor Analysis of LTO**

Indicator	Factor 1	Factor 2
Thrift	.45	.78
Perseverance	-.33	.80
National Pride	.80	-.08
Religious faith	.81	-.30
Parents do their best	.41	-.76
Divorce justifiable	-.88	.10
Love parents	.84	-.06
KMO Measure of Sampling Adequacy	0.76	
Variance explained (%)	50.69	23.64
Total	74.33	

a varimax rotation

n = 109

To examine the possibility of constructing LTO dimension at the regional level, I have taken additional steps. I aggregated all EVS items at the regional level then examined the correlation and theoretical link between items. Both Minkov's (2011) and Minkov and Hofstede's (2012) examination indicated that for the LTO dimension, the highest loading items were *thrift* and *perseverance*. I have examined the correlations between *thrift* and *perseverance* and other aggregated EVS items. After I identified items

that correlate highly with thrift and perseverance, I have examined the theoretical relationship. Aside from thrift and perseverance LTO also captures characteristics such as delayed gratification of outcomes, hard work and tradition. The following two items capture the theoretical essence of LTO; thus, I have included them in my analysis.

Now I'd like you to tell me your views on various issues.

Would you place your views on this scale? (mean, 1-10 scale)

1 In the long run, hard work usually brings a better life

2

3

4

5

6

7

8

9

10 Hard work doesn't generally bring success - it's more a matter of luck and connections.

Now I want to ask you some questions about your outlook on life. Each card I show you has two contrasting statements on it. Using the scale listed, could you tell me where you would place your own view? 1 means you agree completely with the statement on the left, 10 means you agree completely with the statement on the right, or you can choose any number in between. (mean, 1-10 scale)

1 Ideas that stood the test of time are generally best

2

3

4

5

6

7

8

9

10 New ideas are generally better than old ones

With the addition of these two items, I factor analyzed nine items. The means, standard deviations and item correlation and factor analysis results are shown in Table 26

and Table 27. Cronbach's alpha for the nine-item LTO measure was .67. The validity of this nine-item LTO measure can be questioned. Thus, I have taken one additional step to make sure that the result of a nine-item factor analysis does not depart from the original LTO measure. I have aggregated the same nine items to the nation level, factor analyzed and correlated the results with Hofstede, Hofstede and Minkov's (2010) LTO scores. The correlation between the two LTO scores at the nation level is .55 ( $p < .01$ ,  $n = 28$ ).

**Table 26. Item Means, Standard Deviations and Inter-Item Correlations for LTO Dimension (9 items)**

	Mean	s.d.	1	2	3	4	5	6	7	8	9
1. Always love parents <sup>a</sup>	72.15	16.38	1								
2. Thrift <sup>a</sup>	34.98	10.00	.24**	1							
3. Perseverance <sup>a</sup>	33.78	10.60	-.26**	.31**	1						
4. Religious faith <sup>a</sup>	28.01	16.64	.60**	.04	-.35**	1					
5. Parents do their best <sup>a</sup>	70.72	10.33	.42**	-.30*	-.67**	.39**	1				
6. National pride <sup>a</sup>	42.45	17.86	.62**	.20*	-.24*	.60**	.26**	1			
7. Divorce justifiable <sup>a</sup>	5.33	0.85	-.58**	-.34**	.34**	-.67**	-.42**	-.53**	1		
8. Hard work <sup>b</sup>	4.82	0.64	-.12	-.54**	-.26*	-.11	.23*	-.18	.27**	1	
9. New ideas <sup>b</sup>	5.24	0.43	-.25*	-.48**	-.24*	-.06	.03	-.06	.19	.39**	1

a n=113

b n=93

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ; +  $p < .1$  (2-tailed)

**Table 27. Results<sup>a</sup> of Factor Analysis of LTO (9 items)**

<b>Indicator</b>		<b>Factor 1</b>	<b>Factor 2</b>
Always love parents		.87	-.13
Thrift		.30	-.82
Perseverance		-.44	-.63
Religious faith		.83	-.09
Parents do their best		.57	.49
National pride		.83	-.07
Divorce justifiable		-.82	.25
Hard work		-.15	.71
New ideas		-.13	.67
KMO Measure of Sampling Adequacy	0.77		
Variance explained (%)		39.24	25.12
Total	64.36		

a varimax rotation

Table 28 shows the means, standard deviations and correlations of all the measures used in hypotheses testing.

**Table 28. Means, Standard Deviations and Correlations of all the Measures Used**

	mean	s.d.	1	2	3	4	5	6	7	8	9
1. Entrepreneurship <sup>a</sup>	11.90	10.64	1								
2. Institutional Trust <sup>b</sup>	2.41	0.16	-.34**	1							
3. Institutional trust (Beugelsdijk, 2006) <sup>b</sup>	25.42	17.93	-.00	.24**	1						
4. Education (s) <sup>c</sup>	39.40	13.02	-.10	.02	-.16	1					
5. Education (t) <sup>c</sup>	22.44	7.91	-.26**	.16	.35**	.19*	1				
6. GDP <sup>c</sup>	4.32	.17	-.03	.09	.59**	.22**	.59**	1			
7. Unemployment <sup>b</sup>	8.64	4.00	.02	-.10*	-.24**	-.19*	-.20*	-.46**	1		
8. Patent Applications <sup>d</sup>	91.37	112.77	-.22**	.26**	.37**	.18*	.32**	.54**	-.36**	1	
9. R&D expenditure <sup>b</sup>	351.63	356.12	-.23**	.21**	.36**	.26**	.58**	.64**	-.34**	.75**	1
10. Use of ICT <sup>e</sup>	54.10	17.25	-.41*	.38**	.26*	.04	.56**	.58**	-.55**	.43**	.50**
11. IC (4-item) <sup>f</sup>	0	1	.21*	-.27**	.42**	.09	.33**	.54**	-.20*	.30**	.29**
12. UA (Kaasa et al.) <sup>g</sup>	0	1	.41**	-.53**	-.37**	-.20*	-.32**	-.44**	.41**	-.52**	-.49**
13. UAI <sup>h</sup>	0	100	.30**	-.45**	-.44**	-.29**	-.48**	-.41**	.43**	-.37**	-.39**
14. Exclusionism vs. Universalism <sup>i</sup>	0	100	.22	-.38**	-.45**	-.32**	-.62**	-.66**	.51**	-.45**	-.52**
15. Indulgence vs. Restraint (4-item) <sup>j</sup>	0	100	.06	.16	.43**	.31**	.51**	.76**	-.67**	.39**	.48**
16. LTO <sup>k</sup>	0	1	.34**	-.10	.22**	-.31**	.15	.02	-.02	-.41**	-.25*
17. Population density <sup>c</sup>	350.64	817.21	-.07	.03	.07	.26**	.39**	.38**	.10	.14	.34**
18. Age <sup>a</sup>	49.16	4.17	.14	-.03	.17*	.02	.14	.27*	-.35**	.13	.04



	10	11	12	13	14	15	16	17	18
1									
.29**	1								
-.83**	-.05	1							
-.71**	-.05	.56**	1						
-.85**	-.27**	.66**	.67**	1					
.65**	.53**	-.52**	-.60**	-.82**	1				
-.17	-.09	.13	-.30*	-.18	.11	1			
.28*	.22*	-.10	-.13	-.24**	.17	-.10	1		
.48**	.19*	-.28**	-.25**	-.39**	.44**	.24*	-.09	1	
a n=141		g n= 130							
b n=134		h n= 107							
c n= 139		j n= 136							
d n=138		k n= 101							
e n=68		m n=93							
f n=128									

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

## V. RESULTS

The purpose of this study was to examine the relationship between context and entrepreneurship levels in within-country regions of Europe. I provided a literature review and hypotheses with regard to this relationship. In the previous chapter, I described methods used to analyze the proposed relationships and commented on the construction of measures. This chapter presents the results of analyses performed.

### **Hypotheses Testing**

*Effects of nation-level variables* As indicated in Chapter Three, social security, protection of property rights, regulatory complexity and availability of finance are nation-level variables that can affect entrepreneurship. Table 29 shows the relationship between these variables and nation-level entrepreneurship levels. Due to high correlation between availability of finance and regulatory complexity, I have excluded availability of finance from my analysis. In addition, because of high correlation between protection of property rights and regulatory complexity, I combined the two items and named it *regulations*.

**Table 29. Item Means, Standard Deviations and Correlations  
of the Nation-Level Variables Used**

	<b>mean</b>	<b>s.d.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Entrepreneurship	11.47	7.05	1				
2. Protection of Property Rights <sup>a</sup>	5.28	0.98	-.32	1			
3. Social security Contribution <sup>a</sup>	39.27	6.12	-.24	-.14	1		
4. Availability of Finance <sup>b</sup>	34.65	13.36	.52	-.69*	.16	1	
5. Regulatory Complexity <sup>a</sup>	1.14	0.53	-.22	.91**	-.29	-.92**	1

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

a n=11 b n=10

*Examination of the null model and region-level control variables* Interpretation of multilevel analysis starts with examination of the null model. The results of the null model showed that the portion of the total variance in entrepreneurship level that resides at the nation level was 54.16%. Since I used level-2 variables as control variables, the percent of nation-level variance is not directly relevant to my hypothesis testing. In addition, an examination of level-2 effects was not possible with 11 countries since level-2 variance components exhibit large bias with small level-2 sample sizes (Maas & Hox, 2005). Thus, I will not be commenting on the null model results for the rest of the analyses.

I examined the effects of level-1 control variables. The relationship between age and entrepreneurship levels across regions was not statistically significant; the relationship between population density and entrepreneurship levels across regions was marginally significant (p<.1) however the variance explained by level-1 control variables was less than 0.01%. Thus, I have excluded level-1 control variables from the analysis.

*The relationship between institutional context and entrepreneurship* The effects of institutional context on entrepreneurship rates were tested using HLM. Two separate

analyses were set up since two different institutional trust measures were used. The first analysis included the 7-item institutional trust measure, education and control variables. The second analysis examined the relationship of Beugelsdijk's (2006) institutional trust measure, education and variables to entrepreneurship. Table 30 shows the results of the relationships among the first institutional trust measure, education and entrepreneurship levels across 131 regions; six regions were excluded from the analysis due to small sample size and four regions were excluded due to missing education data.

The full model converged after eight iterations. After controlling for social security contribution and regulations at the nation level, institutional trust affected entrepreneurship levels positively. No significant relationships of education to entrepreneurship levels were observed. Further analysis indicates that institutional trust explains 2.92% of the variance that resides at the regional level.

**Table30. HLM Results for the Relationship between Institutional Context and Entrepreneurship**

	<b>Entrepreneurship</b>	
<i>Control (level 2)</i>	<b>Γ</b>	<b>t(d.f)</b>
Social Security Contribution	-0.50	-0.90(8)
Regulations	-4.29	-1.39(8)
<i>Main Effects (level 1)</i>	<b>γ</b>	<b>t(d.f)</b>
Institutional Trust1	13.09*	2.11(125)
Education_2	0.06	0.42(125)
Education_3	0.02	0.15(125)

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

Table 31 shows the results of the analysis of the relationship between Beugelsdijk's (2006) measure of institutional trust, education and entrepreneurship across 130 regions. The final model converged after eight iterations. The results showed that after controlling for social security contribution and regulations at nation level, no significant relationships were observed at the regional level. The results of the regression analysis showed that Hypothesis 1 is supported only when the first measure of institutional trust is used and Hypothesis 2 is not supported.

**Table 31. HLM Results for the Relationship between Institutional Context (Beugelsdijk's measure) and Entrepreneurship**

	<b>Entrepreneurship</b>	
<i>Control (level 2)</i>	<b><math>\Gamma</math></b>	<b><i>t(d.f)</i></b>
Social Security Contribution	-0.34	-0.70(8)
Regulations	-2.99	-1.03(8)
<i>Main Effects (level 1)</i>	<b><math>\gamma</math></b>	<b><i>t(d.f)</i></b>
Institutional Trust2	-0.04	-0.48(124)
Education_2	0.06	0.38(124)
Education_3	0.01	0.06(124)

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

*The relationship between economic context and entrepreneurship* The effects of economic context on entrepreneurship rates were tested using HLM and the results are shown in Table 32. The full model converged after seven iterations. The analysis included 134 regions; seven regions were excluded from the analysis due to missing data. No significant relationship between GDP and entrepreneurship or between

unemployment and entrepreneurship was observed. Hypothesis 3 and Hypothesis 4 were not supported.

**Table 32. HLM Results for the Relationship between Economic Context and Entrepreneurship**

Entrepreneurship		
<i>Control (level 2)</i>	$\Gamma$	<i>t(d.f)</i>
Social Security Contribution	-0.41	-0.98(8)
Regulations	-2.94	-1.10(8)
<i>Main Effects (level 1)</i>	$\gamma$	<i>t(d.f)</i>
GDP	-1.02	-0.16(129)
Unemployment	0.06	0.26(129)

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

*The relationship between technological context and entrepreneurship* The effects of technological context on entrepreneurship rates were tested using HLM. Data for the use of internet measure was missing for several regions thus only 68 regions across six nations were included in this analysis; the use of internet data for Belgium, France, Poland, Romania and Greece was missing. The model converged after 12 iterations. Table 33 shows the results of the examination of the hypothesized relationships. No statistically significant relationships were observed. Hypothesis 5 was not supported.

I excluded the use of internet variable and ran a second analysis that included 138 regions across 11 nations. The model converged after five iterations. The results showed that the region-level technological context variables did not affect region-level entrepreneurship levels.

**Table 33. HLM Results for the Relationship between Technological Context and Entrepreneurship**

Entrepreneurship		
<b>Control (level 2)</b>		
Social Security Contribution	$\Gamma$	$t(d.f)$
	0.28	1.03(3)
Regulations	-3.73	-0.95(3)
<b>Main Effects (level 1)</b>		
	$\gamma$	$t(d.f)$
Use of Internet	-0.10	-0.67(62)
Patent Application	-0.01	-0.52(62)
R&D investment	0.002	0.06(62)

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

*The relationship between cultural context and entrepreneurship* Different datasets were set up for the analyses. The first analysis examined the relationship between individualism-collectivism, uncertainty avoidance and entrepreneurship. Hofstede's dimensions were constructed for 128 regions using Kaasa et al.'s (2014) approach; 13 regions were excluded from the analysis due to missing data. The full model converged after eight iterations and the results are shown in Table 34.

**Table 34. Hierarchical Linear Modeling Results for the Relationship between Cultural Context (Kaasa et al. measures) and Entrepreneurship**

Entrepreneurship		
<b>Control (level 2)</b>		
Social Security Contribution	$\Gamma$	$t(d.f)$
	-0.43	-1.05(8)
Regulations	-2.29	-0.86(8)
<b>Main Effects (level 1)</b>		
	$\gamma$	$t(d.f)$
IC (Kaasa et al.)	-1.07	-1.31(123)
UA (Kaasa et al.)	0.55	0.52(123)

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

Ninety nine regions were included in the second analysis which examined the relationship between individualism-collectivism, Minkov and Hofstede's (2014) construction of uncertainty avoidance and entrepreneurship. Data for Austria, Italy and Romania was missing. The results are shown in Table 35. Both analyses indicated that no significant relationships were observed.

**Table 35. Hierarchical Linear Modeling Results for the Relationship between Cultural Context and Entrepreneurship**

	<b>Entrepreneurship</b>	
<b><i>Control (level 2)</i></b>	<b><math>\Gamma</math></b>	<b><i>t(d.f)</i></b>
Social Security Contribution	-0.41	-0.84(5)
Protection of Property Rights	-3.74	-1.06(5)
<b><i>Main Effects (level 1)</i></b>	<b><math>\Gamma</math></b>	<b><i>t(d.f)</i></b>
IC (Kaasa et al.)	-0.71	-0.75(94)
UA (Minkov & Hofstede)	0.78	0.77(94)

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

The third analysis examined the relationship of exclusionism versus universalism, indulgence versus restraint and LTO to entrepreneurship. Eighty seven regions across eight countries were included in the analysis. Data for France, Greece, Romania and 15 other regions were missing. The full model converged after ten iterations. Results are shown in Table 36. After controlling for social security contribution and regulation at the nation level, the relationship between LTO and entrepreneurship was marginally significant and it explained 1.99% of the variance that resides at the regional level. No other statistically significant relationships were observed.



**Table 36. Hierarchical Linear Modeling Results for the Relationship between Cultural Context (Minkov's Measures) and Entrepreneurship**

<b>Entrepreneurship</b>		
<b>Control (level 2)</b>		
Social Security Contribution	$\Gamma$	$t(d.f)$
Protection of Property Rights	0.22	0.66(5)
	-1.22	-0.44(5)
<b>Main Effects (level 1)</b>		
	$\gamma$	$t(d.f)$
Exclusionism vs. Universalism	-0.46	-0.24(81)
Indulgence vs. Restraint	-0.22	-0.11(81)
LTO	2.33 <sup>+</sup>	1.70(81)

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

The results are summarized in Table 37.

**Table 37. Summary of Hypothesis Testing**

<b>Institutional Context and Entrepreneurship</b>	
1 (+) Supported	The level of institutional trust will be positively associated with level of entrepreneurship across regions.
2 (+) Not supported	The level of education will be positively associated with level of entrepreneurship across regions.
<b>Economic Context and Entrepreneurship</b>	
3 (-) Not supported	The level of economic development will be negatively associated with level of entrepreneurship across regions.
4 (+) Not supported	The level of unemployment will be positively associated with level of entrepreneurship across regions.
<b>Technological Context and Entrepreneurship</b>	
5 (+) Not supported	The level of technological development will be positively associated with level of entrepreneurship across regions.
<b>Regional culture and entrepreneurship</b>	
6a (+) Not supported	The level of individualism will be positively associated with level of entrepreneurship across regions.
6b (-) Not supported	The level of exclusionism will be negatively associated with level of entrepreneurship across regions.

7a (-) Not supported	The level of individualism will be negatively associated with level of entrepreneurship across regions.
7b (+) Not supported	The level of exclusionism will be positively associated with level of entrepreneurship across regions.
8 (-) Not supported	The level of uncertainty avoidance will be negatively associated with level of entrepreneurship across regions.
9 (+) Partially supported	The level of long-term orientation will be positively associated with level of entrepreneurship across regions.
10 (+) Not supported	The level of indulgence will be positively associated with level of entrepreneurship across regions.

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## **VI. DISCUSSION, CONTRIBUTIONS AND CONCLUSION**

In this section I will comment on the findings and expand on the contributions of these findings to the international entrepreneurship and international management literatures. I will comment on implications for policy makers and conclude with limitations and future research opportunities.

### **Summary and Findings**

I started with recent IE literature reviews to identify the gaps and the models used both at national and regional levels. I used Wennekers' (2006) model because it is the most comprehensive model that includes the environmental factors that might affect a potential entrepreneur's decision to pursue self-employment. Europe is an interesting context to study these environmental factors. The European Commission's Enterprise and Industry Department leads efforts to gather data to inform policy makers. The European Commission constantly promotes entrepreneurship research as well as entrepreneurship.

I used the percentage of the workforce that is self-employed as my entrepreneurship measure and hypothesized that institutional, economic, technological and cultural contexts will affect entrepreneurship levels across regions of Europe. The European Commission uses NUTS regional classification. In some EU countries, the Commission's NUTS classification and cultural boundaries do not overlap; thus, I used

only the countries that have administrative regions that overlap the Commission's NUTS classification. I used HLM to test the hypothesized relationships. Out of the three institutional context variables tested, only institutional trust was related to entrepreneurship levels. Regions with higher levels of institutional trust also had higher levels of entrepreneurship. Continuous interactions between government institutions, officials and individuals lead to perceptions of fairness, neutrality of institutions and reliability of delivery of services. Government institutions and officials perceived to be accountable, incorrupt and providing impersonal justice allow markets to function efficiently. This perception could lead to higher levels of entrepreneurship because it can lower transactions costs that the potential entrepreneurs endure. Potential entrepreneurs can pursue opportunities knowing that they will be able to create and capture the value from that opportunity.

The results indicated that after controlling for social security contributions and regulations at the national level, education had no relationship to entrepreneurship levels across regions. It is possible that instead of secondary and tertiary education, education that is geared toward entrepreneurship might affect entrepreneurship levels. For example, both GEM and Eurobarometer ask questions about education geared towards entrepreneurship. GEM asks questions such as "teaching in primary and secondary education provides adequate attention to entrepreneurship and new firm creation" and "teaching in primary and secondary education provides adequate instruction in market economic principles". The Eurobarometer surveys about participation in entrepreneurship courses and about the skills and know-how to enable participants to run a business (The European Commission, 2012). Moreover, availability of entrepreneurship

education can also increase acceptance of entrepreneurship as a viable and conventional career path.

I used GDP and unemployment as economic context factors. The results indicated that after controlling for the effects of regulations and social security contributions at the nation level, neither GDP nor unemployment was related to entrepreneurship levels across regions. Even though economic development has been examined either as a determinant or an outcome of entrepreneurship levels, no relationship was observed between GDP and entrepreneurship levels across regions.

The relationship between technological context and entrepreneurship has not been explored at the regional level. The results indicated that after controlling for the effects of regulations and social security contributions at the nation, no relationship between technological context and entrepreneurship was observed. It is possible that my measure of entrepreneurship did not capture the relationship between the technological context and entrepreneurship. Literature suggests that the availability of R&D activities, R&D spending and widespread use of internet can create new opportunities. Proximity to universities, higher levels of R&D activities and higher levels of R&D spending can lead to knowledge spillover and new business creation. Other measures of entrepreneurship, such as the Global Entrepreneurship Monitor's established business owner rate, innovative new business owner rate or independent new business owner rate, can be used to examine the relationship between technological context and entrepreneurship. Unfortunately, these measures of entrepreneurship are not publicly available at regional level.

Examining the relationship between cultural context and entrepreneurship revealed that after controlling for the effects of regulations and social security contributions at the nation level, only LTO dimension was related to entrepreneurship. Higher levels of long term orientation were related to higher levels of entrepreneurship across regions. This result mirrors the previous research examining the relationship between LTO and entrepreneurship. Literature details the need for patience, persistence, tenacity to pursue goals for the success of entrepreneurial endeavors. Long term perspective can be found in societies that are high in LTO.

Even though previous research supports the link between individualism-collectivism, uncertainty avoidance and entrepreneurship, no relationship was observed at the regional level. Literature points out the strong relationship between uncertainty avoidance and entrepreneurship, especially when entrepreneurship is measured as patent applications (Jones et al., 2011; Hayton et al., 2001). Using different measures of entrepreneurship to examine the relationship between Hofstede's dimensions and entrepreneurship can be informative. The relationship between exclusionism versus universalism and indulgence versus restraint dimensions and entrepreneurship was not tested before and the results of the analysis indicated that there was no relationship between these dimensions and entrepreneurship at the regional level when entrepreneurship is measured as self-employment.

I started with the general research question examining *the relationship between contextual factors and the levels of entrepreneurship across within-country regions*. Four more specific questions were asked about the relationship between the institutional, economic, technological, cultural contexts and entrepreneurship. The results show that

when self-employment is used to proxy for entrepreneurship, institutional trust and LTO affect entrepreneurship levels across regions.

### **Contribution to Macro Level International Entrepreneurship Literature**

Macro level IE studies examine the differences in the levels of entrepreneurship across countries and regions. At the national level, institutional context, level of economic development, unemployment and cultural context received attention as determinants of entrepreneurship levels (Verheul et al., 2002; Audretsch et al., 2002; Wennekers et al., 2002; Wennekers, 2006). The macro level is not limited to nation-level studies; several studies focus on sub-national or regional level. From these studies we know that variation in the levels of entrepreneurship across regions is greater than national differences (Bosma & Schutjens 2009, 2011; Sternberg, 2004; Fritsch & Mueller 2006; Tamásy 2006) and that these differences persist over time (Sternberg, 2009, 2011). We also know that factors which affect nation-level entrepreneurship levels affect regional entrepreneurship levels differently (Fritsch & Storey, 2014). Even though EU policy-makers make policy decisions to increase entrepreneurship levels across regions, research results are not clear enough to help policy-makers. Region-level macro entrepreneurship research lags behind nation-level research, especially when it comes to an examination of the relationship between context and culture on entrepreneurship.

The contributions of this study to international entrepreneurship literature are as follows: examination of the link between technological context and entrepreneurship, examination of region-level cultural context, analysis of contextual factors using a nested model, examination of a framework at its entirety at regional level.

First, the link between entrepreneurship and technological context is complex. Several different measures of entrepreneurship have been used and the link between entrepreneurship and technological context depends on the measures used. For example, at the regional level, research results support a positive link between innovative start-ups and the presence of research institutes and funding (Fritsch & Aamoucke, 2013; Bade & Nerlinger, 2000). However, when self-employment was used as a proxy for entrepreneurship, no significant relationship was observed between technological context variables and entrepreneurship across regions. These results should provoke more examination of the relationship between technological context and entrepreneurship. Other measured of entrepreneurship must be used to increase the understanding of researcher and policy makers.

Second, the relationship between national culture and entrepreneurship has been examined at the national level (e.g. Busenitz, et al., 2000; Lee & Petersen, 2000; Mueller & Thomas, 2000; Stephan & Uhlaner, 2010; Uhlaner & Thurik, 2004; Wennekers, et al., 2001). However, the link between regional culture and entrepreneurship has never been studied. My dissertation is the first step to fill this gap. Even though research supports a link between culture and entrepreneurship at the national level, research points out the presence of regional cultural differences. Individuals in different regions can have different values, attitudes and behaviors which might affect individuals' perception of the environment and willingness to pursue entrepreneurship. Especially in nations with regional cultural differences, such as Greece, Poland, Romania and Spain, the effects of regional cultural differences might be more important to study than the effects of national cultural differences. In addition to Hofstede's individualism-collectivism and uncertainty



avoidance dimensions, I also examined the link between LTO, indulgence versus restraint, exclusionism versus universalism and entrepreneurship. The results indicated that LTO is the only cultural dimension that affects entrepreneurship levels across regions.

Even though the cultural dimension of power distance (PD) has received attention in the IE literature, I did not hypothesized about the relationship between PD and entrepreneurship levels across regions. No theoretical link exists between power distance and entrepreneurship, measured as self-employment. Researchers who examine this relationship cite previous research but do not provide a theoretical link. Other researchers have used other measures of entrepreneurship, such as patents granted and venture creation decision and examined the link of power distance with entrepreneurship (Mitchell et al., 2000; Shane, 1993). Shane (1993) states that beliefs and values promoted by power distance, such as hierarchy, communication patterns, centralization of power, control over subordinates and resistance to change, impair entrepreneurship, measured as patents granted. Mitchell et al. (2000) state that in high power distance countries individuals might accept that only the elite have the means and the ability to create new ventures.

In light of the previous research, I have excluded power distance from my analysis. However, the possible overlap between power distance and uncertainty avoidance (Minkov, 2014) require further examination of the relationship between power distance and entrepreneurship; Appendix A shows these results. The results indicated that after controlling for the effects of regulations and social security contributions at the

nation level, there is no significant relationship between power distance and entrepreneurship.

Third, level of analysis is an important issue in entrepreneurship research. Nested relationship is present in every level of analysis. At the individual level, regional and national factors could affect the hypothesized relationships. At the firm level, industry and regional effects cannot be ignored. At the regional level, the effects of nation-level factors must be considered. In my dissertation, I have identified nation-level factors that show more variation across nations than across regions. For example, social security contributions are determined by national laws, not regional laws. Similarly, laws that determine the protection of property rights are instituted at a national level. Many of the region-level studies ignore this effect and do not utilize nested models. Using HLM is one way to account for nation-level effects. I have accounted for the direct effects of nation-level variables on entrepreneurship levels across regions.

Finally, several frameworks have been used in nation-level studies. To date, Sternberg's (2011) region-level framework is the only source for region-level entrepreneurship studies. However, it is not possible to test Sternberg's framework in its entirety. To test the relationship between environmental context and entrepreneurship at the regional level, I have used Wennekers' (2006) nation-level framework. Using a nation-level framework to test region-level relationships revealed that factors that explain the differences in entrepreneurship levels across nations did not explain differences in entrepreneurship levels across regions. For example, one of the environmental contextual factors that have received attention at the national level studies is economic context. Even though there was a strong link between entrepreneurship and GDP at nation level, no

such link was observed at the regional level. This supports the assertion of Fritsch and Storey (2014) that factors that have received attention in nation-level research might have different influences at the regional level. Researchers must pay more attention to frameworks that apply at different levels of analysis.

### **Contribution to International Management Literature**

The contribution to international management literature can be summarized as use of multiple waves and development of cultural dimensions at the regional level.

Data availability is an issue that international entrepreneurship, international business and international management fields often deal with. Large scale studies are used to examine cultural dimensions and differences across nations. However, great time and effort are needed to complete these studies. At the regional level, only few examples of examination of cultural dimension are present; the use of secondary data sources (such as EVS, WVS and ESS) have been used to construct value dimensions at the regional level.

In my dissertation, I used multiple waves of EVS and ESS to construct value dimensions at the regional level. This also allowed me to examine the question of combining waves. Some countries are included in all the waves whereas others are included in two or three waves. For example, Italy was surveyed in the first, second and the sixth waves of ESS but not in the third, fourth and fifth waves. Combining waves, as done by Minkov and Hofstede (2012), can increase the number of countries/regions included in a study or can be used to replace missing items. The use of multiple waves, combining waves and using items from different waves brings the question of culture

stability and culture change. Kara and Peterson (2012) indicated that there are mechanisms that can lead to culture stability and change. However, ESS is conducted every two years and we have data for only six waves. Before we can examine these practices as well as cultural stability and change, data over longer periods of time must be collected.

Only few studies explored the possibility of construction cultural value dimensions at the regional level. Kaasa et al. (2013, 2014) constructed Hofstede's dimensions at the regional level; however, Kaasa et al.'s conceptualization of UA is different from Hofstede's (1980) and Minkov and Hofstede's conceptualization. Minkov's dimensions have not been constructed at the regional level yet. To date, no large-scale effort that explores regional cultural dimensions is present. I have used secondary data and constructed individualism-collectivism, uncertainty avoidance, LTO, exclusionism versus universalism and indulgence versus restraint at regional level. Additional steps were needed to attain theoretically and methodologically sound measures. Six-item individualism-collectivism measure had low reliability. Elimination of two items increased the reliability of the measure significantly. Similarly, I had to add an item to attain acceptable reliability for the indulgence versus restraint dimension. Since several items were missing from the original LTO construction, I used highly correlated and conceptually relevant items to construct LTO at regional level. Such additional steps or modifications indicate that region-level cultural dimension construction can deviate from nation-level cultural dimension construction. For example, different items are used to construct Schwartz value dimensions at individual and nation-level values. Conducting research at different levels of analysis, ecological fallacy and

reverse ecological fallacy have been discussed in international management literature (Hofstede, 2001; Grenness, 2012; Saha, O'Donnell, Patel & Heneghan, 2008; Girard & Bertsch, 2011). Construction of value dimensions at different levels must be approached with care.

### **Implications for Policy-Makers**

Fritsch and Storey (2014) stated that regional entrepreneurship research has not fulfilled the promise of policy guidance. Researchers have not been able to inform policy makers about the factors that improve regional entrepreneurship levels and factors that retain entrepreneurship levels over time. The results of my dissertation indicated that the indicator used to measure entrepreneurship might affect determinants of entrepreneurship; different contextual factors could be related to different measure of entrepreneurship (e.g. self-employment, new firm formation and patent applications.) Policies put in place to increase self-employment might have no effect on innovative or new firm formation levels.

My analyses included contextual factors that can be determined by policies and 'natural' contextual factors that cannot be determined by policies. Policies can affect unemployment rates, education levels and R&D investment. However, as indicated by Kara and Peterson (2012), for cultural changes, coercive institution characteristics have modest importance at best. Cultural context can be more strongly related to entrepreneurship rather than the factors that can be determined by policies. EU interventions that are targeted at economic development in certain regions might not result in the desired outcomes if the only determinant of entrepreneurship is cultural context. For example, one can think that structural funding received by a region would

affect entrepreneurship levels in that region. Dellmuth (2011) examined the relationship between structural fund distribution and regional government ties. The data specified the amount of funding received by each region in the following countries: Austria, Belgium, France, Germany, Greece, Italy, Spain, Sweden and the United Kingdom. I have examined the relationship between structural funding and entrepreneurship levels across regions. The results indicated that structural funding had no effect on entrepreneurship levels, measured as self-employment, across regions.

In conclusion, policy-makers must have clear goals when deciding on which interventions to use. Funding policies might not achieve desired results if policies are not directed at the appropriate factors. In addition, these factors might depend on the measure used. If culture matters more than socio-economic factors and infrastructure, researchers must examine ways to develop norms, values and codes of conduct that promote entrepreneurship (Fritsch & Wyrwick, 2014). These norms, values and codes of conduct can also increase acceptance of entrepreneurship as a viable career path. Moreover, the focus of policy makers must be on factors that can be altered by investigation and investment and not on factors that cannot be altered by investment.

### **Limitations and Future Research**

Every dissertation, manuscript or project has limitations which create future research opportunities. For this dissertation, the first limitation and opportunity comes from the use of percentage of self-employment as a measure of entrepreneurship. Even though self-employment is an often used measure of entrepreneurship, very little information with regard to growth or employment creation can be gathered from self-

employment. If the goal is to understand employment creation and economic prosperity, multiple measures of entrepreneurship must be included in studies and clear links must be established; as stated by Bosma and Sternberg (2014), context matters but different types of entrepreneurship are affected by context differently. In other words, different measures of entrepreneurship can have different determinants. For example, if number of patents granted per 1,000 residents is used as a measure of entrepreneurship, then R&D investment, power distance and education level can be important factors. Similarly, other proxies can be used for institutional context, technological context and economic context. Different results can be attained when different proxies are used.

The link between cultural context and entrepreneurship cannot be ignored at national and regional levels. I used individualism-collectivism, uncertainty avoidance, LTO, exclusionism versus universalism and indulgence versus restraint. Analyses as well as theoretical explanations with regard to the mechanisms of the effects can lead to better understanding of the link between cultural context and entrepreneurship. As regional scores for other cultural frameworks become available, opportunities to examine the link between culture and entrepreneurship will arise.

As stated by Shane (1993), if regions cannot change the level of entrepreneurship by simply spending to change unemployment levels, GDP and education, policy-makers must be guided to spend on initiatives that are more targeted toward specific outcomes (self-employment, small businesses or innovative start-up). Future research can shed some light on possible policy initiatives and link them to entrepreneurship levels. My dissertation only highlighted the link between self-employment and environmental factors. The results show that the proxy chosen for entrepreneurship is important in

establishing these links. In addition, the results show that construction of value dimensions at the regional level is possible but additional steps must be taken.

The results of my analysis should not discourage researchers from exploring the relationship between within-country regional variables and entrepreneurship. First, before developing a different framework specifically for region-level examination of entrepreneurship, we must examine the proposed relationships with a larger dataset. I have used only a set of nations that received structural funding from the 2007-2013 EU funding cycle and that have administrative bodies that can distribute the funding received. This restriction resulted in elimination of several countries and regions. Since there was no statistically significant relationship between receiving structural funding and entrepreneurship levels across regions, we can loosen the criteria and include more countries and regions. Same framework and variables can be used to test the proposed relationships with a larger sample.

Second, the effects of homogeneity and heterogeneity of within-country regions must be considered. Historical perspective as well as empirical results must be used to identify countries which have within-country regions. The current framework and variables can be examined on the sample of countries that has strong within-country regional presence. As indicated in Appendix B, some of the countries exhibit cultural heterogeneity (or presence of within-country regional presence) whereas others exhibit more cultural homogeneity.

Third, GEM has been collecting data at the regional level across the EU. Even though country coordinators have used this regional data, a larger data set is not publicly available. GEM contains several measures of entrepreneurship, such as TEA, established



business ownership rate, independent new business ownership rate, innovative new business ownership rate, necessity-based entrepreneurship rates, opportunity-based entrepreneurship and high-potential total entrepreneurship activity. In addition, several categories of constraints and support mechanisms are asked to GEM participants. The proposed framework can be tested using GEM data to proxy for the proposed variables.

Aside from the research implications for the relationship between contextual factors and entrepreneurship, the results of my dissertation holds research implications for international management literature. I have used one new (indulgence/restraint) and one understudied (long term orientation) culture dimension. In addition to entrepreneurship, other phenomena, such as organizational commitment or group/team literatures, can benefit from the use of these dimensions. For example, the relationship between LTO and organizational commitment can be studied. If one of the characteristics of LTO is willingness to subordinate oneself for a purpose, then organizational commitment might be higher in societies that are high in LTO dimension. Long-term profits are important for the company as well as the individual; overlapping goals might be observed and higher levels of organizational commitment can be observed in nations with higher levels of LTO.

In conclusion, the relationships that have been supported in nation-level studies did not materialize at the regional level. It is possible that relationships can emerge when different forms of entrepreneurship are studied. Thus, before making suggestions to policy makers, a detailed examination of determinants of different forms of entrepreneurship is necessary. Changes in the socio-economic environment and infrastructure might not affect entrepreneurship rates across regions; the effects of

informal institutions might be more prominent since informal institutions determine the code of conduct, values and norms persist over time and might have a long lasting effect on regional entrepreneurship levels.

## **APPENDIXES**

## Appendix A

To examine the possible overlap between Uncertainty Avoidance and Power Distance and the effects of power distance on entrepreneurship levels, I have constructed construct the power distance dimension. Kaasa et al. (2014) used items from ESS and EVS. I used the following items from ESS:

- How satisfied with the way democracy works in country (Average on scale 0-10)
- I am going to read out a list of things about your working life. Using this card, please say how much the management at your work allows/allowed you to decide how your own daily work is/was organized? (Average on scale 0-10)
- Using this card, please say to what extent you agree or disagree with each of the following statements: The government should take measures to reduce differences in income levels (Average on scale 1-5)

In addition, two items from EVS were used.

- How much confidence in: parliament, (Average on scale 1-4)
- How free are you to make decisions in job, (Average on scale 0-10)
- Here is a list of qualities which children can be encouraged to learn at home. Which, if any, do you consider to be especially important?  
Learn children at home: obedience, share of those, (share of those, for whom it is important)

According to Kaasa et al. (2014), the results of confirmatory factor analysis show that the latent variable explains 47.68% of variance across 98 NUTS1 regions and 50.16% of variance across 200 NUTS2 regions. The loadings of all six items were .41 or higher at NUTS1 and NUTS2 regions. I did as Kaasa et al. (2014) and reverse coded the items so that higher values will reflect agreement with the statements. Then, I aggregated each item to the regional level and then factor analyzed them. I saved factor scores as region-level measure of power distance. Table A1 shows item means, standard deviations, and inter-item correlations for power distance. Table A2 shows results of factor analysis. The items that loaded lower than .4 was eliminated; Table A3 shows results of factor analysis with 4 items. The alpha of the measure is .58. Table A4 shows

correlations between power distance and uncertainty avoidance dimensions. Table A5 shows the results of the HLM analysis which included 134 regions; the results show that there is no relationship between power distance and entrepreneurship levels across regions.

**Table A1. Item Means, Standard Deviations, and Inter-Item Correlations  
for Power Distance Dimension**

	Mean	s.d.	1	2	3	4	5	6
1. Satisfied with democracy <sup>a</sup>	5.14	.85	1					
2. Allowed to decide daily work organisation <sup>a</sup>	6.13	1.11	.20**	1				
3. Confidence in parliament <sup>b</sup>	1.19	.25	.44**	.28**	1			
4. Reduce income inequality <sup>a</sup>	3.89	.32	-.54	-.18*	-.10	1		
5. Free to make decisions in job <sup>b</sup>	6.74	.74	.03	.28**	.20*	-.14	1	
6. Learn children obedience <sup>b</sup>	30.24	14.36	-.20*	-.25**	-.21*	-.02	.08	1

a n=134

b n=141

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

**Table A2. Latent Factors of Power Distance: Indicators, Factor Loadings  
and Variance Explained**

Indicator	N=134
satisfied with democracy	.78
allowed to decide daily work organisation	.61
confidence in parliament	.67
reduce income inequality	-.60
free to make decisions in job	.34
learn children obedience	-.38
KMO Measure of Sampling Adequacy	0.52
Variance explained (%)	34.33

**Table A3. Latent Factors of Power Distance: Indicators, Factor Loadings and Variance Explained (4-item)**

Indicator	N=134
satisfied with democracy	.85
allowed to decide daily work organisation	.53
confidence in parliament	.66
reduce income inequality	-.69
KMO Measure of Sampling Adequacy	0.51
Variance explained (%)	47.41

**Table A4. Correlations between Power Distance and Uncertainty Avoidance Dimensions**

	Mean	s.d.	1	2	3
1. UA (Kaasa et al.) <sup>a</sup>	0.00	1.00	1		
2. UAI (Minkov & Hofstede) <sup>b</sup>	0.00	100.00	.56**	1	
3. PD (Kaasa et al.) <sup>a</sup>	0.00	1.00	-.60**	-.54**	1

a n=130

b n=101

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1 (2-tailed)

**Table A5. HLM Results of PD on Entrepreneurship**

	Entrepreneurship	
<b>Control (level 2)</b>	<b>Γ</b>	<b>t(d.f)</b>
Social Security Contribution	-0.38	-0.92(8)
Institutions	-3.06	-1.14(8)
<b>Main Effects (level 1)</b>	<b>γ</b>	<b>t(d.f)</b>
PD	-0.19	-0.17(130)

\*\*\* p<.001; \*\* p<.01; \* p<.05; + p<.1

## **Appendix B**

Following international entrepreneurship literature, I used NUTs classification as a proxy for regional cultural division (Beugelsdijk et al. 2006, Kaasa et al. 2010, Kaasa et al., 2013, Kaasa et al., 2014). Kaasa et al.'s (2014) stated that even though NUTS levels have been used in analysis, some countries are quite homogeneous whereas others might show higher variability at NUTS level. According to Kaasa et al.'s (2014) analysis, Finland, Sweden, Denmark, Ireland, Netherlands and Bulgaria were homogeneous (the mean absolute deviations at NUTS level did not deviate from nation-level cultural dimension scores). Kaasa et al.'s (2014) analysis also show that large within-country differences were observed in Germany, UK (at nuts 1 level), Greece, Poland, Romania and Spain (at Nuts 2 level).

I have conducted additional analysis to examine if the regions included in my analysis do exhibit variation or if the countries are homogeneous with regard to cultural dimensions. I have constructed each measure at nation level using the same dataset used for regional cultural dimension construction. Following Kaasa et al., (2014), I have then calculated mean absolute deviation for each region. For each cultural dimension, deviation of the regional score from the score of the country was examined. Table B1 shows the results of the analysis.

**Table B1. Mean Absolute Deviations of Cultural Dimensions for Countries**

Country	Nuts Level	IC (4-item)	UA (Kaasa et al.)	UAI (Minkov & Hofstede)	Indulgence vs. Restraint (4-item)	Exclusionism vs. Universalism	LTO (9-item)
		(ESS/EVS) s.d.=1	(ESS/EVS) s.d.=1	(ESS) s.d.=100	(EVS) s.d.=100	(EVS) s.d.=100	(EVS) s.d.=1
Austria	Nuts2	0.74	1.12		37.55	38.17	0.57
Belgium	Nuts2	0.42	0.59	53.09	46.77	45.10	0.30
Germany	Nuts1	0.34	0.97	48.19	74.68	51.84	0.30
Greece	Nuts2	0.53	0.56	55.06		33.52	
France	Nuts2	0.49	0.33	38.28		22.70	
Italy	Nuts2	0.46	1.55		30.86	31.47	0.50
NL	Nuts2	0.34	2.61	44.01	25.75	37.60	0.16
Poland	Nuts2	0.49	1.43	47.90	29.98	26.37	0.71
Romania	Nuts2	0.62	1.76		30.08	28.73	
Spain	Nuts2	0.95	0.66	60.96	89.72	44.24	0.44
UK	Nuts1	0.32	0.76	39.43	25.62	31.28	0.58



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