Culture, Entrepreneurship and Innovation:

Freedom, Tolerance and the Role of Subcultures

Kumulative Dissertation
der Wirtschaftswissenschaftlichen Fakultät
der Universität Augsburg
zur Erlangung des akademischen Grades eines Doktors
der Wirtschaftswissenschaften
(Dr. rer. pol.)

vorgelegt von

Nikolaus Seitz

4. August 2017

Erstgutachter:	Prof. Dr. Erik E. Lehmann
Zweitgutachter:	Prof. Dr. Marcus Wagner
Vorsitzender der mündlichen Prüfung:	Prof. Dr. Daniel Veit
Tag der mündlichen Prüfung:	21. Dezember 2017

PREFACE

The importance of innovation for economic growth has been widely recognized amongst economists. To understand innovation, scholars have recently shifted their attention away from the firm level towards geography and the role of place-based entrepreneurship. Alongside this research stresses the importance of various factors, conditions, and national and regional endowments. Besides physical factors such as infrastructure, legal institutions, financing and R&D, scholars also highlight the crucial role of much "softer", social and cultural-driven factors.

The following thesis sheds light on the role of culture for innovation. Previous research has outlined that a certain cultural atmosphere supporting personal freedoms and tolerance for diversity is essential to innovation because it attracts creative talents and fosters a climate of experientialism and creativity where competition and entrepreneurship can flourish. Nevertheless, several questions remain open that this thesis aims to address at different units of spatial analysis. At the institutional and national level, it explores the limits and conditions under which freedom and a climate of cultural tolerance adds to innovation and when it can act as a hindrance. At the regional level, it develops a model of place-based entrepreneurship revolving around subcultures and their impact in creating open and free environments where creative talents feel inspired, and which might be the most attractive and conducive to work.

CONTENTS

Please note: References are provided at the end of each chapter and research paper, respectively. Equations, tables, and figures are numbered within each chapter and research paper

I. Introduction

What really drives economic growth has long been in the midst of economic debates. Over past 250 years, the literature has taken a remarkable shift, from first the accumulation of the traditional factors of production - land and labor, to an era of scale and scope and the role of large and hierarchically-governed firms. Today, the importance of innovation for economic growth is widely recognized by both economists and policy makers. Across the globe, this has led to extensive investments in policy programs that aim to promote innovation.

To understand innovation, scholars have recently shifted their attention away from the firm level, towards geographical space and the role of place-based entrepreneurship. However, two lines of research have been exposed in the literature. The first focuses on regions and local agglomerations and highlights the importance of spatial proximity for stimulating knowledge spillovers and place-based entrepreneurship (Acs, Braunerhjelm, Audretsch, & Carlsson, 2009; Cooke & Lazzeretti, 2008; Jaffe, Trajtenberg, & Henderson, 1993; Porter, 1998). The second strand concerns national institutions and how innovation should best be organized, for instance, whether diversity and free competition or specialization and centralized factors work best for coordinating innovation (Acs, Audretsch, Lehmann, & Licht, 2016; Audretsch & Feldman, 2004). Within both strands, literature has stressed the increasing importance of much "softer" and social-driven factors such as quality of life, the role of culture and social norms (Audretsch, Obschonka, Gosling, & Potter, 2017; Beugelsdijk & Maseland, 2010; Freytag & Thurik, 2010). In recent years, both policy and academic literature have shown increasing interest in the notion of cultural tolerance and social freedom for stimulating regional and national innovation capacities. It is argued that high levels of freedom and tolerance are essential for guaranteeing diversity and competition; thus, spawning spillovers and creative entrepreneurship as well as attracting talents and human capital (Cushing, Florida, & Gates, 2002; Lee, Florida, & Gates, 2010; Qian, 2013). Nevertheless, despite extensive discussions, empirical evidence regarding

the influence of freedom and tolerant cultures on innovation-driven growth is scarce and conflicting.

This thesis aims to contribute to this increasingly relevant field of cultural studies and innovation literature. In particular, we are interested in the impact of a culture for freedom and tolerance for individuality on regional and national innovation systems; its limits and the underlying forces that might be in play. The nature of this thesis is mainly empirical and includes four articles that each built on one another.

The first article (chapter II) is a review of the research field. Since the 1990s, an increasing body of literature is dealing with culture as a source of entrepreneurship and innovation within different contexts or levels of analysis (e.g. management studies), at firm level, across regions or within national systems (Beugelsdijk, 2010; Davidsson & Wiklund, 1997; Freytag & Thurik, 2010; Guiso, Sapienza, & Zingales, 2006). Today, the literature lacks clear and definable research domains. Thus, it seems reasonable to first elaborate a taxonomy of cultural studies in economic theory and to summarize main strands and previous findings in the literature. Across all studies and strands of research, there seems to be one basic upshot: open and tolerant cultures that value individualism and freedom are most conducive for high innovation and growth rates. Nevertheless, a considerable debate has emerged around two main issues. The first concerns whether there is an optimal level of freedom and diversity. The second deals with the role of social capital and creative milieus.

The empirical articles II, III and IV of this thesis take upon these relatively less developed issues in literature. Thereby, the second article explores the limits of personal freedom on national innovation. Economists have consistently linked personal freedoms with growth and economic development. An effective rule of law, property rights, tolerance for individuality and decentralized free market competition would always coordinate the actors for the first-best, most “efficient” solution, thus, establishing a sustainable and competitive innovation system where creative entrepreneurship and innovation can flourish. However,

while certain levels of personal freedoms may be crucial to first ignite competition and creative spillovers, the effect may not be strictly positive. Downside risks such as the disadvantages of free market competition and the negative spillovers of increasing personal freedom, e.g. diversity and weakened social ties, may limit the benefits of increasing freedom on innovation performance (Berggren & Jordahl, 2006; Cushing, Florida, & Gates, 2002; R. Landry, Amara, & Lamari, 2002). Using a hand-collected panel dataset of 57 countries and the all 50 U.S. states, this study aims to explore the costs and benefits of personal freedoms on national innovation outcomes. We hypothesize that the freedom and innovation link is inverse U-shaped, thus, reflecting the trade- offs between the costs and benefits of both weak and strong social ties for national innovation.

The third article included in this dissertation re-examines the personal freedom and innovation linkage while considering the socio-institutional context. In adherence with previous research, we agree that levels of freedoms are needed to stimulate creativity and innovation, but these effects are more nuanced in a context of rising social diversity, which weakens community ties and hinders the sharing of trustworthy information and knowledge. However, we assume that these trade-offs are moderated by levels of social trust, the quality of institutions and economic development. Feeling safe and protected may reduce the negative spillovers of rising freedom and diversity, thus, making people less suspicious and stimulating interactions and spillovers. Consequently, we argue that trust – both interpersonal as well as within institutions – may strengthen the effect of personal freedom on national innovation performance. We subject our theory to empirical scrutiny by analyzing a detailed data set spanning innovativeness on a global scale, including the 50 U.S. states and 31 Chinese regions.

The fourth study shifts its attention from the macro level towards the regional level and the influence of local cultures on innovation. An influential stream of research notes that a location's capacity for innovation is a product of skilled and entrepreneurial talents that today are highly mobile and feel especially attracted to places offering high quality of life (Florida,

2002, 2014; Glaeser, Rosenthal, & Strange, 2010). Nevertheless, what is known of the type of features that make places attractive and create a good quality of life for those talented people is limited and controversial. While several scholars have emphasized the general importance of diversity and a vibrant cultural life (Clark, 2004; Falck, Fritsch, & Heblich, 2011; Florida & Gates, 2003), we attempt to introduce a new and complementary perspective and put the role of subcultural scenes at the centre of creative entrepreneurial ecosystems. Social and economic innovations have always been pushed forward by pioneering the subgroup of "creative destructors" that share values and beliefs that are different from the establishment. Thus, we believe, instead of culture as a whole, it might be more promising to take a closer look at subcultures and their influence on urban creative and entrepreneurial scenes. We test this hypothesis by deploying an explorative factor analysis to compare the impact of different measures of subcultural amenities against the traditional measures used to reflect „mainstream" culture on start-up rates in the 69 largest cities in Germany.

This thesis aims to contribute to current discussions about the role of sociocultural underpinnings in national and regional innovation systems. By re-examining the freedom-innovation link, our findings also add to the currently re-ignited political debate about the benefits and disadvantages of freedom and diversity and may provide a useful lens through which the recent elections in Europe or the United States could be interpreted. By identifying the relevant factors conducive for startup hotspots, we add to our knowledge about entrepreneurial milieus and their location choices. We hope these findings make an important contribution to recent controversies within the innovation and entrepreneurship literature and offer key insights and guidance for policy makers and urban planners.

References

Acs, Z. J., Audretsch, D. B., Lehmann, E. E., & Licht, G. (2016). National systems of innovation. *The Journal of Technology Transfer*, 1-12.

Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economics, 32*(1), 15-30.

Audretsch, D. B., & Feldman, M. P. (2004). Knowledge spillovers and the geography of innovation. *Handbook Of Regional And Urban Economics, 4*, 2713-2739.

Audretsch, D. B., Obschonka, M., Gosling, S. D., & Potter, J. (2017). A new perspective on entrepreneurial regions: linking cultural identity with latent and manifest entrepreneurship. *Small Business Economics, 48*(3), 681-697.

Beugelsdijk, S. (2010). Entrepreneurial culture, regional innovativeness and economic growth *Entrepreneurship and Culture* (pp. 129-154). New York: Springer.

Beugelsdijk, S., & Maseland, R. (2010). *Culture in economics: History, methodological reflections and contemporary applications*. Cambridge: Cambridge University Press.

Clark, T. N. (2004). Urban amenities: lakes, opera, and juice bars: do they drive development? *Clark, Terry Nichols (2004) The city as an entertainment machine. research and urban policy, 9*, 103-140.

Cooke, P. N., & Lazzeretti, L. (2008). *Creative cities, cultural clusters and local economic development*. New York: Edward Elgar Publishing.

Cushing, R., Florida, R., & Gates, G. (2002). When social capital stifles innovation. *Harvard Business Review, 80*(8), 20.

Davidsson, P., & Wiklund, J. (1997). Values, beliefs and regional variations in new firm formation rates. *Journal of Economic psychology, 18*(2), 179-199.

Falck, O., Fritsch, M., & Heblich, S. (2011). The phantom of the opera: Cultural amenities, human capital, and regional economic growth. *Labour Economics, 18*(6), 755-766.

Florida, R. (2002). *The rise of the creative class and how it's transforming work, leisure, community and everyday life (Paperback Ed.)*: New York: Basic Books.

Florida, R. (2014). The creative class and economic development. *Economic Development Quarterly, 28*(3), 196-205.

Florida, R., & Gates, G. (2003). Technology and tolerance: The importance of diversity to high-technology growth. *Research in Urban Policy, 9*(1), 199-219.

Freytag, A., & Thurik, R. (2010). Introducing entrepreneurship and culture. *Entrepreneurship and Culture* (pp. 1-8). New York: Springer.

Glaeser, E. L., Rosenthal, S. S., & Strange, W. C. (2010). Urban economics and entrepreneurship. *Journal of Urban Economics, 67*(1), 1-14.

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes? *The Journal Of Economic Perspectives, 20*(2), 23-48.

Jaffe, A. B., Trajtenberg, M., & Henderson, R. (1993). Geographic localization of knowledge spillovers as evidenced by patent citations. *the Quarterly Journal of Economics, 108*(3), 577-598.

Lee, S. Y., Florida, R., & Gates, G. (2010). Innovation, human capital, and creativity. *International Review of Public Administration, 14*(3), 13-24.

Porter, M. E. (1998). *Clusters and the new economics of competition* (Vol. 76): Harvard Business Review Boston.

Qian, H. (2013). Diversity versus tolerance: The social drivers of innovation and entrepreneurship in US cities. *Urban Studies, 50*(13), 2718-2735.

II. Article 1: Culture, Entrepreneurship and Innovation: A Taxonomy of the Literature

Author: Nikolaus Seitz, University of Augsburg, Chair for General Management

Abstract. While questioning what shapes innovation and entrepreneurial activity, scholars have recently highlighted the central role of culture. Culture defines a vague set of "shared characteristics, values, institutions and thoughts". Its influence on economic activity is ubiquitous and runs through a number of different channels and causalities - that yet are less understood. Over recent years, various dimensions of culture have been introduced in the economic literature and been discussed either on the national level, or within the regional and local context. This article discusses the current state of the art in the expanding field of cultural studies in economic literature. It synthesizes main approaches, their achievements so far, and directions for future research. Reviewing the literature has revealed three main strands of research. Studies within the first strand focus on values and national cultures. The second focuses on spillovers and social norms, while the third spots the impact of cultural amenities and milieus. However, a common denominator of all this research appears to be that cultural notions of social freedom, individuality and diversity are essential because it fosters competition and creative entrepreneurship, and attracts human capital. Nevertheless, what do such conducive cultures exactly look like, remains both controversial and unknown. This article aims to contribute to current debates by providing a comprehensive taxonomy of both the critical arguments and "blind spots" and therefore, adds to our understanding of the social underpinnings of economic development.

JEL Classification: A13 - B15 – 01- O3 – O43

Keywords: Culture – social capital –economic growth – innovation - entrepreneurship

1. INTRODUCTION

In unpacking the black box of economic development, economists have recently re-discovered the particular role of much softer, culturally-led factors (Huggins & Thompson, 2014; Obschonka et al., 2015). Over the past decade, there has been a real explosion of publications related to various aspects of culture in economic life. Renowned academic journals, like the Journal of Evolutionary Economics, Regional Studies, Urban Studies, Entrepreneurship Theory and Practice, Comparative Labor Law and Policy Journal, Business and Society (just to name a few), have all published special issues concerning the role of culture for both managerial and development economics.

The common ground is that culture is crucial for economic growth as it stimulates knowledge spillovers, innovation, and specifically its transformation into economic growth via entrepreneurial activity. Indeed, there is ample evidence suggesting that the differences in innovation and entrepreneurial activity among countries and regions are relatively stable over time and cannot totally be explained by hard, traditional economic variables such as income level, industrialization, R&D and technological development. However, a substantial part of these variations rather relate to non-economic, socio-demographic and institutional factors, where norms and culture seem to be crucial (Beugelsdijk & Maseland, 2010; Davidsson & Wiklund, 1997; Freytag & Thurik, 2010).

The trend explaining economic performance in terms of non-economic factors has resulted in numerous cultural theories and several ill-defined concepts that shed light on various notions of culture (Beugelsdijk & Klasing, 2013; Hayton, George, & Zahra, 2002). Although, extensive empirical research has been carried out over recent years, the exact link between culture, innovation and entrepreneurship as a driving force of economic development, is still less developed. For example, while we do know for sure that culture matters, we do not know

what exact type, what it looks like, or how it should be measured. Nor do we know what influences its presence or explains its absence (Krueger, Liñán, & Nabi, 2013).

Over past years, research has become vast. The literature spans a wide array of different research questions and sheds light on various meanings and explanations for how culture impacts economy (Sun, 2009; Torjman & Worren, 2010). Furthermore, the interdisciplinary aspect that is notoriously inherit in the notion of culture has pushed this fragmentation of research further. For example, while some scholars focus on the relationship between political and entrepreneurship culture (Gerring, Bond, Barndt, & Moreno, 2005; Przeworski, Limongi, & Giner, 1995), others have drawn attention to the role of religious faiths (Inglehart, 2004; Weber, 1905/2002) or have emphasized the role of other ethnic and cultural heritages (Stuetzer, Obschonka, Brixy, Sternberg, & Cantner, 2014). Whereas some have concentrated on values transcendent in national cultures (Franke, Hofstede, & Bond, 1991; Schwartz, 2006), others have focused on the role of local cultures and milieus (Florida, 2002; Wagner & Sternberg, 2004), or have studied the impact of multiculturalism and cultural diversity on economic development. (N. Lee, 2015; Smallbone, Kitching, & Athayde, 2010; Urban, 2006),

Today, the entire research field lacks of clear and definable domains, and is filled with conflicting evidence and theoretical shortcomings. It is the objective of this article to deepen our understanding of what elements of culture influence economic development. Thereby, I aim to provide a comprehensive review of the state-of-the-art in this area. The article is organized in the following manner. The next section provides an introduction into the history of culture in economic literature. By reviewing the existing literature, I identify three major categories in research that each is discussed in the following sections. The first is behaviour-based, and focuses on the role of cultural values in shaping entrepreneurial motivations (Section 3). The second revolves around local and social networks and how culture facilitates spill overs and the collaboration between members. (Section 4). The third analyses the impact of cultural amenities

on regional development (Section 4). Section 5 summarizes the main findings and provides implications for future research.

2. CULTURE IN ECONOMIC LITERATURE

Of course, the question of how much culture affects economy is not new. Going back, Adam Smith (1776) has already outlined the relevance of moral sentiments for economic decisions. Most notably, Weber (1930) has shed light onto the particular role of religious norms and beliefs in forming the ascent of western capitalistic societies. Similarly, Polanyi (1957) illustrates that it has been the upcoming ideal of liberalism that started first an institutional revolution and that secondly paved Britain's "great transformation" towards an industrialized, market society.

However, despite these early examples, economists have long been reluctant to consider the impact of cultural aspects into economic theory (Guiso, Sapienza, & Zingales, 2006; Licht, 2010; Licht, Goldschmidt, & Schwartz, 2007). Much of this reluctance stems from the complexity inherent in the notion of culture. Culture is notoriously a fuzzy and vague construct, which lacks a clear and sizeable definition (Beugelsdijk & Maseland, 2010). The notion of culture includes patterns of thinking, feeling and acting, which are learned and cultivated by people within a certain social context (Taylor & Wilson, 2012; Tubadji, 2012). Cultural norms might be changeable but are also quite persistent over time and can be threatened as a quasi-exogenous given source (Audretsch, Obschonka, Gosling, & Potter, 2017; Beugelsdijk & Maseland, 2010; Falck, Fritsch, & Heblich, 2011; Fritsch & Wyrwich, 2012). Culture has many facets and is supposed to have a profound impact of every facet of social life, through various channels and causalities. (Freytag & Thurik, 2010; Krueger et al., 2013; Torjman & Worren, 2010). For example, as a set of "shared values and beliefs , culture influences the way people see and interpret the world and how they value economic chances and threats, thus guiding their decisions and motivations (Freytag & Thurik, 2010; Guiso et al., 2006; Johnson & Lenartowicz,

1999). However, on a collective level, culture even defines a set of social norms, "the rules of the game", that coordinate people's interactions and relations, including their willingness to cooperate and share valuable information (Denzau & North, 1994; Licht et al., 2007; North, 1994). Due to the complexity traditionally inherited in the notion of culture, economists have long been reluctant to consider soft, culturally-driven factors in analyzing economic phenomenon (Beugelsdijk & Maseland, 2010; Licht et al., 2007).

However, since the late 1980s onwards, times have changed. There is new data availability, recent advances in statistical techniques, but especially it has been the rise of new endogenous growth theory that has triggered a real renaissance of cultural thought in economic literature. Endogenous growth theory provides a revision of the neoclassical growth-accounting model by stressing the importance of knowledge for economic growth (Acs & Varga, 2002; Asheim & Gertler, 2005; Audretsch & Keilbach, 2008; Jaffe, Trajtenberg, & Henderson, 1993). Knowledge is a non-rival information good with the potential to spillover and be adapted by neighboring firms and producers (Jaffe et al., 1993; Lucas, 1988; Romer, 1994). As a result, due to positive externalities of knowledge, an economy can grow much faster than may be expected on basis of their input and investments in R&D (Van Stel & Nieuwenhuijsen, 2004). Thus, cracking the DNA of knowledge spillovers has become a priority issue of economists and development planners. Following this, scholars have drawn attention onto two important mechanisms. First, institutions matter. Since firms benefit from each other´s R&D and investments, especially those institutions that protect and motivate the actors to exploit and share knowledge, e.g. IP and legal enforcement, are essential (Acs, Audretsch, Lehmann, & Licht, 2016; Rodríguez-Pose, 2013). Second, geography matters. Thus, since tacit knowledge is best transferred via social interactions and face-to-face contacts, spatial proximity and local agglomerations are crucial for facilitating knowledge flows and spillovers (Audretsch & Feldman, 2004; Riggs & Von Hippel, 1994). However, within the intersection of both

mechanisms, culture is supposed to play an important role as it both is part of the institutional environment as well as it is highly geographically-bounded sources that tightens community and social networks, thus, facilitates interactions and spillovers (Blair, Carroll, & Rowe, 2009; Westlund & Adam, 2010). Nevertheless, despite substantial previous research, several questions remain unanswered.

Especially, what exact type of culture is needed, what does it look like, and moreover, what are the underlying forces and causalities through which culture affects spillovers and economic activity, has yet been only poorly understood (Krueger et al., 2013; Freytag & Thurik, 2010). Over the past years, a large body of cultural studies has emerged, spanning different research disciplines and levels of analysis (Beugelsdijk & Maseland, 2010; Tubadji, 2012; Goldschmidt et al., 2006). For instance, while some authors have concentrated on cultural values and entrepreneurial motivations (e.g. Davidsson & Wiklund, 1997; Rauch, Frese, Wang, & Unger, 2010); others stress regions and the role of cultural amenities (Florida & Gates, 2003; N. Lee, 2015; Niebuhr, 2010) and the role of political culture (Acemoglu & Robinson, 2005; Baptista, 2010; Bjørnskov, 2005); or have focused on the influence of creative milieus and cultural diversity (Florida, 2002; Qian, 2013; Saxenian, 1996; Tian & Wang, 2014).

Altogether, the entire research field lacks well-definable domains and consistent concepts and findings. Reviewing the vast body of literature allowed me to identify three general categories of research, each analyzing the role of culture from a distinct perspective. Research in the first category is behavior-based and draws attention to the link between values and macro-psychological traits. Literature here attributes high economic activity with certain cultural values that are associated with entrepreneurial behavior such as individual need for achievement, autonomy and competition (e.g. McClelland, 1965; Hofstede, 1991). The second category is contextual in its nature. Not completely discounting the role of the individual, literature within this category is focusing on the role of culture in facilitating social relations

and bridging-and-bonding diverse networks (e.g. Hauser et al., 2007; Cushing, Florida & Gates, 2002). The third category focuses on the quality of life in places, exploring the impact of cultural amenities on regional development (e.g. Jacobs, 1970; Lloyd & Clark, 2001; Florida, 2002). The following sections discuss each stream and present key studies and the research methods that are used.

2.1 Behavior-Based Research

The role of culture is exposed in several theories and strands of economic literature (Davidsson, 1995; Guiso et al., 2006). One major strand traditionally focuses on impact of values and beliefs on aggregate measures of economic performance. There is little doubt that cultural values influence the way people think and interpret their environment, thus, shaping peoples´ actions in every facet of social and economic life. It seems plausible that certain behavioral preferences including those positively associated with high economic dynamism, such as entrepreneurship and innovation, might be more common in certain cultures (Beugelsdijk & Maseland, 2010; Freytag & Thurik, 2007; Hayton et al., 2002).

However, the questions about what types of culture are relevant has engaged researchers for more than a century. For instance, Weber (1930) is one of the first modern authors that has linked economic growth with religious norms. He suggests that it has been the puritan ethic code that leads to the striving for profit and ascetic capital accumulation with no goal other than re-investment and high work productivity, which has built America´s ascent. McClelland (1961, 1965) was pioneering in providing evidence for the interplay between beliefs, personal motivations and entrepreneurship. McClelland (1961) hypothesized that countries exhibiting a higher achievement motivation would show also more entrepreneurial activity. He compared the achievement motivation in the children stories of 22 countries and found a statistically significant relationship between a country's average level of need of achievement and the subsequent economic growth of that country 25 years later. He also found evidence for the

relationship between need of achievement and entrepreneurial activity based on historical records of earlier societies. In the same vein, Spence (1985) and Morris, Davis, and Allen (1994) have found evidence that the high rates of entrepreneurship in the United States are attributable to high achievement motivations and the strive for personal independence.

The broad literature on culture in economic development almost invariably draws on the theory of cultural values dimension advanced by Hofstede (1991). Using explorative factor analysis, Hofstede (1993) has provided the first empirically proven taxonomy of cultural value dimensions. The original theory outlines four dimensions along which culture could be studied: individualism-collectivism; uncertainty avoidance; power distance (strength of social hierarchy) and masculinity-femininity (task orientation versus person-orientation). Within the context of entrepreneurship for instance, McGrath, MacMillan, Yang, and Tsai (1992) found support that entrepreneurial cultures all score high in power distance, individualism, masculinity, but low in uncertainty avoidance. Shane (1992) investigated the relationship between Hofstede's measures of culture and national innovation rates and shows that individualistic societies with less-hierarchies are more inventive. Comparing the innovation output of 33 countries, Shane (1993) reveals that innovation output is most closely related to low uncertainty avoidance and high individualism, but negatively linked with high power distance. Studying the corporate level, Shane (1995) also revealed that organizations with low individualism and high levels of uncertainty avoidance are less innovative. These results support earlier findings by Morris, Davis, and Allen (1994) who link Hofstede´s dimension towards corporate entrepreneurship. Their findings suggest that individualism is positively associated with willingness of people to violate norms and be creative, both of which relate to entrepreneurship. Moreover, their results indicate that in cultures emphasizing group thinking over individual initiative, only a few individuals put their latent entrepreneurial attentions into actions. A similar picture is drawn by Rossberger and Krause (2012). Testing the GLOBE

culture dimensions, their study demonstrates that uncertainty avoidance, in-group collectivism, and human orientation are crucial for innovative outcomes in 55 of their sampled countries. Kreiser, Marino, Dickson, and Weaver (2010) used data from 1,048 SMEs across six countries to assess the effect of national cultures on corporate entrepreneurial orientation. Their findings illustrate that uncertainty avoidance and power distance, are negatively associated with entrepreneurial firms and their propensity to display innovation and proactive firm behaviors. Sun (2009) presents a comprehensive meta-analysis showing support that individualism, power distance and uncertainty avoidance are positively correlated with a country's overall innovation capability. Wennekers, Thurik, van Stel, and Noorderhaven (2007) have outlined the particular role of a culture's attitude towards risk and uncertainty for economic and entrepreneurship development. Their study of 21 OECD countries between 1976 and 2004 reveals that especially the level of uncertainty avoidance explains the differences in business ownership rates across these countries. Their study suggests that low levels of uncertainty avoidance reduce the perceived risk and opportunity cost of self-employment, thus encouraging individuals towards entrepreneurial actions.

Thomas and Mueller (2000) demonstrate that an innovative mindset and locus of control are more likely to be found among students from societies exhibiting low levels in uncertainty avoidance and place high value on individualism. Similarly, the ongoing survey of the Global Entrepreneurship Monitor (GEM) team provides evidence that entrepreneurship activity outperforms in countries that value individuality, self-expression and autonomy (Reynolds, Hay, Bygrave, Camp, & Autio, 2000). Mueller and Thomas (2001) have explored the linkage between Hofstede´s cultural dimensions and the BIG FIVE personality traits. Their findings support that individualistic cultures exhibit an increased likelihood of an internal locus of control orientation. Further, innovativeness is more likely to be found in individualistic, low uncertainty avoidance cultures than in collectivistic, high uncertainty avoidance cultures. In addition, recent meta-analyses reveal (Leutner, Ahmetoglu, Akhtar, and Chamorro-Premuzic,

2014; Zhao, Seibert, and Lumpkin, 2010) that entrepreneurial orientation is associated with high conscientiousness, openness and personal extraversion, whereas high levels of neuroticism are negatively correlated.

Others follow a social legitimation and moral approval approach (Etzioni, 1987; Fershtman & Weiss, 1993). This view claims that greater rates of entrepreneurial behavior are found in cultures where entrepreneurs are rewarded with higher social status. For instance, Begley and Tan (2001) show that the social status predicts interest in entrepreneurship in a cross section of six East Asian and four Anglo-Saxon countries. Analyzing data from the World Values Survey and the GEM, Powell and Rodet (2012) also find support that social approval of entrepreneurs is related to increased rates of entrepreneurship and growth across a sample of 21 countries. However, Wyrwich, Stuetzer, and Sternberg (2016) have conducted a quasi-natural experiment from recent German history. East Germany, with its socialist history and legacy, here is regarded as a region with a low approval of entrepreneurship, while West Germany is seen as a high-approval area. Their study outlines that regions with low fear of failure and high social approval of entrepreneurship are more likely to exhibit higher entrepreneurship rates. Moreover, they reveal that the presence of entrepreneurial role models reduces fear of failure in West Germany, but not among East Germans that spent a considerable amount of their life living in socialism.

Scholars has also been interested in the link between political culture, innovation and entrepreneurship culture. Acemoglu and Robinson (2005) outline that economic dynamism depends on political institutions that encourage a culture of autonomy and self-efficacy with less autocracy and formalism. Przeworski et al. (1995), Burkhart and Lewis-Beck (1994) Helliwell (1994) and Franke et al. (1991) suggest that low levels of authority and high degrees of personal autonomy drive economic performance. Licht et al. (2007) have agreed that societies with a strong rule of law, less corruption and democratic participation are a necessary precondition for establishing an entrepreneurial culture. Similarly, Lerner (2009) and Welter

and Smallbone (2006) emphasize the role of institutional trust for stimulating entrepreneurial activity and investments.

Besides democracy and a strong rule of law, others have stressed the influence of liberalism and economic de-centralization to promote a sustainable and competitive innovation system and entrepreneurship culture. Henrekson (2005) has pointed out that generous social welfare and income redistribution policies reduce the incentives for individuals to engage in private wealth formation, which may be negatively linked to entrepreneurial initiative. In the same vein, Hessels, van Gelderen, and Thurik (2008) investigated the relationship between the country´s level of social security and startup rates. Their findings suggest that social security negatively affects people´s ambitions towards entrepreneurial activity.

Berggren (2003) suggests a more fine-grained picture. Thus, whereas generous welfare systems might stifle necessity-based entrepreneurship, because high reservation wages are almost guaranteed; it will, however, promote opportunity-driven entrepreneurship, because people know that if they fail, they do not need to starve. Similarly, Wagener (2000) has shown that generous pension schemes that do not differ between employed workers and entrepreneurs are stifling entrepreneurial culture.

Besides issues of social security, a vast body of literature stresses the importance of free and decentralized markets to foster diversity and creativity, thus, an entrepreneurial culture. Over centuries, there is an ongoing dispute about the costs and benefits of decentralized political systems with a focus on competition and diversity against less decentralized systems (Audretsch, Keilbach & Lehmann, 2006). While neo-classical theory suggests that decentralized factors and free markets provide a wider range of market opportunities, stimulating innovation and creative entrepreneurship via competition (Baumol, 2002; Friedman, 2009; Reynolds, 1999); others are concerned with the merits of free markets and their efficacy in coordinating important innovation projects (Audretsch & Keilbach, 2004). Hence, market failure, such as market entry barriers, high R&D costs, scale economies and the

negative spillovers of personal individuality and freedom such as diversity and weak social ties, may limit the efficacy of free and open cultures for coordinating innovation projects. Nevertheless, whether and to which extent economic decentralization and a culture of freedom and diversity adds to national growth, respective to innovation performance, remains yet unanswered. Empirical research is both scarce and suffers from mixed results. Recently, several authors have asked for more nuanced empirical research identifying whether the relationship may depend upon other characteristics of the socio-institutional environment but also the specific type of innovation and economic development (e.g. Berggren & Elinder, 2012; Berggren & Nilsson, 2014).

2.2 Network-Based Research

Rather than focusing on values and individual motivations, another stream in literature has outlined the importance of culture as a social mechanism to coordinate social interactions and knowledge spillovers. Research within this line agrees that economic development is a product of knowledge spillover and place-based entrepreneurship where spatial proximity and dense social networks play an important role. Culture here is seen as crucial because a) it tightens social ties and b) shapes people´s willingness to share valuable information, to interact and collaborate with each other. A central concept that captures the impact of culture on human relations and economic growth is social capital (Barrutia & Echebarria, 2010; Hauser, Tappeiner, & Walde, 2007).

Social capital does not have a clear, undisputed meaning (Adler & Kwon, 2002). Social capital is about the value of social networks, bonding similar people and bridging diverse people. It is embedded in the shared values and beliefs that link people to a certain group and is often taken as a quasi-outcome of trust (Audretsch, Aldridge, & Sanders, 2011). The source lies in the structure of social relations, thus, it is therefore supposed to effect the "[…] flows

from the information, influence, and solidarity it makes available to the actor" (Adler & Kwon, 2002, p. 23). Nevertheless, whether and to which extent social capital adds to innovation and entrepreneurship-driven growth is far from clear. The debates mainly revolve around two key structural issues – the importance of strong versus weak and open social ties on the one hand, and the role of diversity versus social trust on the other. Generally, there are two opposing strands explored in literature.

The first underlines that high levels of social capital go along with high levels of innovation and entrepreneurship. It is argued that social capital, i.e. a strong social and cultural fit, ties community members together and supports a trusting atmosphere that encourages people to share valuable information and take joint chances on risky ideas (e.g. Adler and Kwon, 2002; Burt, 2000; Fukuyama, 2001; Lin, Cook, and Burt, 2001; Maskell, 2001; Putnam, 1995a; Zheng, 2010). The second strand, however, warns of the merits of tight social knit, such as social coherence, lack of creativity and competition. (Beugelsdijk and Smulders, 2003; Cushing, Florida, and Gates, 2002; Hansen, 1999; Lin, 2002; McFadyen and Cannella, 2004; Morgan, 2007; Nahapiet and Ghoshal, 1998; Portes, 2000; Putnam, 1995a). Increasing social capital "boundaries" around communities and make them reluctant towards new and outside influences (Adler and Kwon, 2002; Cooke, Clifton, and Oleaga, 2005; Florida, 1995; Granovetter, 1985; Hofstede, 1993; Landry et al., 2002; Lehmann and Seitz, 2017; McFadyen and Cannella, 2004; Portes, 2000; Tura and Harmaakorpi, 2005; Waldinger, 1997). Thus, low levels of social capital are needed to ensure diversity, provide sources of inspiration and competition (Cushing, Florida, & Gates, 2002; Florida, 1995; Hauser et al., 2007). This is the view generally associated with Granovetter (1973) and the strength of weak social ties hypothesis or the learning region approach advanced by Florida (1995) and colleagues.

Although both arguments garnered great response among scholars in academia, evidence is mixed and conflicting across all levels of analysis. For instance, Smith et al. (2006) found a non-significant correlation, whereas Ahuja (2000) supports a negative relationship,

Cooke et al. (2005) a positive one, and Uzzi and Spiro (2005) an inverse U-shaped relationship between strong social capital and a firm´s innovation performance. At the regional level, with a much broader perspective on economic growth, Putnam, Leonardi, and Nanetti (1994) document that Northern Italy´s economic success in comparison to the Southern regions is a consequence of the relatively strong community ties of the people in the North. Beugelsdijk and Van Schaik (2005) relate social capital, in the form of generalized trust and associational activity towards economic growth across 54 European regions. Their results suggest that it is not primarily the network size, but especially the strength of ties between community members that stimulates regional economic activity. Akçomak and Ter Weel (2009) analyzed 102 European regions regarding their innovation and growth performance. Their findings suggest that regional innovativeness is conducive to per capita income growth and social capital as measures of social trust affect growth indirectly by fostering entrepreneurial action and innovation. Similarly, Delhey and Newton (2003) and Knack and Keefer (1995) found that there is a positive linkage between social trust and national growth rates. Cooke, Clifton, and Oleaga (2005) report that the regional embeddedness of small and medium sized enterprises into local communities´ networks and strong social capital is crucial to a firm's innovative performance.

Contrarily, Hauser et al. (2007) found support for the weak ties hypothesis of economic development. Utilizing factor analysis and survey data from the European Values Study (EVS), their findings highlight the triggering effect of weak ties for stimulating diversity, coopetition and innovation. Therewith, they support Granovetter (1973) who found that networks characterized by weakly tied connections are essential to source valuable information and knowledge flows. In the same line, Burt (2009) has argued that weak connections tend to "bridge" valuable ideas and otherwise disconnected economic actors, hence, promote both coopetition and competition, thus spur spillovers. Similarly, Singh, Hills, Lumpkin, and Hybels (1999) also find support that weak ties are conducive for the detection of entrepreneurial

opportunities. Their findings suggest entrepreneurs maintain diverse networks, gain information advantages and thus recognize a larger number of opportunities. Similarly, based on a survey among 104 business owners, Chell and Baines (2000) conclude that entrepreneurs who rely on weak ties gain advantage in seeking valuable information and market signals. Santarelli and Tran (2013) also confirm that the benefits from weak ties outweigh those from strong ties. Their analysis of 1,398 Vietnamese startups demonstrates that holding weakly tied social relations allows entrepreneurs to gain access to relevant information and detect valuable opportunities for collaborations. Fleming, King, and Juda (2007) also fail to find support that strong, cohesive networks enhance innovation productivity across geographic regions. Likewise, Cushing et al. (2002) found evidence that social capital stifles regional innovation via strong social ties that hinder creativity and information flows. Along this line, most notably, Florida et al. (2002) have found support that weak and open community structures are crucial for regions´ capacity for creativity and entrepreneurship. Places with looser networks and weak ties are more open to new and outside influences and let ideas and people flow. Moreover, he notes that there has been a shift in the relevance of social capital: Thus, whereas once historically embraced closeness and strong ties were important for economic performance, now they might appear restricting and even harmful for knowledge spillovers and innovation (Florida, 1995, 2014). Thus, today open networks with an eye on diversity and tolerance constitute the DNA of economic development.

Similarly, Nathan and Lee (2013) have found support that there is an overall "diversity bonus". Using a sample of 7,600 firms in London, their findings reveal that firms´ innovativeness relates to diverse and open social network relations. Lee, Florida, and Acs (2004) have investigated new firm formations across US Metropolitan Areas and Labor Market Areas. Findings also support the hypothesis that diversity contributes to regional entrepreneurship rates. Support - both on firm and regional level - comes also from a recent survey by N. Lee (2015). Analyzing data of over 2,000 small and medium sized enterprises in

the UK, they found strong evidence for both a firm and urban effect. Thus, firms with a greater share of partners and diverse network are more likely to introduce new products and processes. The urban context does also seem to matter. Hence, firms in diverse cities are also more innovative firms in cities with less ethnic diversity.

However, whether social capital "bridges" or "bounds" creativity spillovers and entrepreneurship, is still an open quest. Besides operationalization and "technical" issues, a growing body of studies has recently stressed whether mixed findings might not reside in theoretical shortcomings and a systematic misinterpretation of the underlying forces that are in play. Scholars point out that the effect might be mixed, non-linear or nuanced by additional factors. For instance, Landry, Amara, and Lamari (2002) differentiate between six different forms of social capital, i.e. business network assets, information network assets, research network assets, participation assets, and relational assets and reciprocal trust. Their survey reveals that innovation is not a discrete but a complex process where different types of innovation require different cultures and types of social capital at different stages of the innovation process. Niebuhr (2010) analyzed the cost and benefits of cultural diversity for innovation outcomes. Her findings suggest that the benefits of diversity, such as idea pluralism, open-mindedness and creativity, outweigh its costs (e.g. communication and coordination), and thus matters for innovation and R&D related activity. In a similar vein, Leenders, Van Engelen, and Kratzer (2003) and McFadyen and Cannella (2004) argue that there might be a quadratic relationship between cultural diversity and innovation. Utilizing a sample of biomedical research scientists, McFadyen and Cannella (2004) have found strong support that there are diminishing returns to knowledge spillovers with increasing openness of networks and weak ties. Similarly, Leenders et al. (2003) have found an inverted U-shape between tie strength as means of cultural diversity and creativity performance, respectively on firm level. Similarly, Davidsson and Honig (2003) found support that both is needed – weak and strong ties. Thus, their results imply that whereas strong ties are needed for "bonding" and exploiting key

resources (e.g. patent activity), weak ties are necessary for gaining access to outside information and diverse resources. Lechner, Dowling, and Welpe (2006) argue in a similar direction. Their results suggest that strong and social ties are both valuable for entrepreneurship but demonstrate their respective value in different phases of the entrepreneurial process. Whereas weak ties and diversity seem to be important for collecting information and creative experimentation, strong ties become even more important when it comes to the process of implementation.

Ruef, Aldrich, and Carter (2003) also promote a "holding mixed ties" approach. Thus, highly innovative networks need both strong and weak ties: diversity and weak ties gain creativity advantages, whereas strong ties are essential to build a trustworthy environment that is conducive for investments, technology transfer and new venture creation.

2.3 Amenity-Based Research

The previous sections have shown that culture is a multi-facet construct that affects economic activity both on the individual level, in terms of beliefs and personal motivations, as well as social relations, where it acts as lubricant of networks and spillovers. In addition to those two channels, a third - conceptually "bridging"- stream in literature has highlighted the role of culture as an amenity to attract human capital. Pioneering scholars, such as Ullman (1954) Jacobs (1970) and, of course, Marshall (1929) have long pointed out that it is especially the local endowment of smart people – their abilities and talents - that shapes places' economic performances. Today, there is a virtual consensus that local concentration of human capital drives regional innovation and development. Human capital, of course, is not evenly distributed across geographic space. Research has identified a number of relevant factors, including thick labor markets, the role of top universities, (Kuratko, 2005; Lehmann, 2015; Leydesdorff & Etzkowitz, 1996), low rents and high income levels (Acs, Desai, & Hessels, 2008; Glaeser, Resseger, & Tobio, 2009; Wennekers, Van Wennekers, Thurik, & Reynolds, 2005), and the co-

location of incumbent firms and high tech-industries (Audretsch & Belitski, 2013; Caragliu, Del Bo, & Nijkamp, 2011; Glaeser, Kahn, & Rappaport, 2008; Knudsen, Florida, Stolarick, & Gates, 2008; Saxenian, 1996). In addition to these mainly "hard" locational factors, a growing body of research has stressed the significant role of much "softer", life-style driven factors and a place's supply on attractions and amenities (Bauer, Breidenbach, & Schmidt, 2015; Clark, 2004; Clark, Lloyd, Wong, & Jain, 2002; Falck et al., 2011; Ferguson, Ali, Olfert, & Partridge, 2007; Rappaport, 2008; Rosenthal & Strange, 2008; Zheng, 2016). The basic argument is that in open and post-industrial economies, talented people are highly mobile and make their locational choices more and more on quality of life and self-realization, rather than solely in terms of careers and economic opportunities (Caragliu et al., 2011; Florida, 2002; Inglehart, 2004). Accordingly, Florida (2002) states that today it is no longer about "creating jobs, and the rest will follow", however, the fastest-growing places are those offering a "sense of place" (Caragliu et al., 2011). Evans (2009) and Clark et al. (2002) also report that there seems to be a general decline in the explanatory power of conventional variables affecting a place's growth. It is argued that in post-industrial, information economies there has been a generally large rise of leisure pursuit compared to work (Clark et al., 2002; Inglehart, Foa, Peterson, & Welzel, 2008; Rappaport, 2008; Zheng, 2016).

Nevertheless, the question of what specific type of amenities actually make a place attractive is less developed (Bauer et al., 2015; Hirschle & Kleiner, 2014; McGranahan, Wojan, & Lambert, 2010; Storper & Scott, 2009; Zheng, 2016). Over the last several years, an extensive body of research has emerged that suggests a widely ranging set of locational amenities spanning from the role of weather conditions, to low rents, quality of infrastructure, educational attainment, and safe neighborhoods. For instance, Mellander, Florida, and Stolarick (2011) illustrate how the quality of public schools and ease of getting from one place to another relates to high human capital concentration. Florida (2013) observes that there is a kind move from the

startup scene from suburban locations, like Silicon Valley or along Boston´s outskirts along the Route 128, towards more denser and walkable outlets, like downtown San Francisco or Lower Manhattan. Other studies have highlighted the role of natural amenities and supply of outdoor facilities (Albouy, Leibovici, & Warman, 2013; McGranahan et al., 2010) and the role of amusement and entertainment amenities. Analyzing a range of 20 different amenities across 3,111 US counties, Clark (2004) has found support that middle-aged highly educated workers appreciate natural and outdoor amenities, whereas young talents gravitate toward constructed "cultural" amenities, such as fine arts, bars and museums. Engineers, researchers and high tech workers seem to live in outlets with both more of outdoor spaces and cultural amenities.

Especially regarding place-based entrepreneurship development, scholars have stressed the particular relevance of cultural endowments and entertainment (Glaeser, Rosenthal, & Strange, 2010; Jacobs, 1970; Rosenthal & Strange, 2008). Some compelling evidence here has been first provided by Roback (1982) and Jacobs (1970) who both outlined that highly skilled and creative people feel especially drawn to vibrant cultural places. It is supposed that cultural amenities span a local system of traditions and creative spaces, such as museums, galleries, music halls or bars that create certain kinds of impulses. Thus, dramatic architecture, music venues, literature, movie productions and art galleries influence people in their perceptions and may inspire them to get creative on their own (Albouy et al., 2013; Bauer et al., 2015; Clark, 2004; Falck et al., 2011; Zheng, 2016). Therefore, numerous studies reveal a high correlation between the presence of cultural amenities, such as art galleries, cafes houses, bars and a vibrant artistic scene with economic development in metro areas (Clark, 2004; Clark et al., 2002; Glaeser, Kolko, & Saiz, 2001; Rappaport, 2008).

Instead of focusing on particular types of amenities, others attempt to examine whether it is more about a certain "spiritus loci". Jacobs (1970) and Simonton (2000) highlighted that a culture for open-mindedness and cultural diversity is a key feature of fast growing places. Florida (2002) has captured this notion in his theory about a 'creative class" and the 3Ts of

regional development, that is tolerance, talents and technology. Accordingly, open and tolerant outlets attract talent from a wider range of social, racial ethnic and demographic groups. Diversity and the co-clustering of talents results in greater idea generation, creativity spillovers, and in turn, magnetizes talent-seeking, high technology firms to co-locate. Florida (2002) has deployed gay-friendliness as a proxy for regional openness towards diversity and found strong support correlation with high share of a creative class across US metropolitan areas.

Although, approaches relating quality of life to economic development received wide popularity among policy makers and researchers over the past decade, their evidence is mixed. Criticism is vast, spanning different aspects - both conceptual and methodological shortcomings (Donegan, Drucker, Goldstein, Lowe, & Malizia, 2008; Kotkin, 2013; McGranahan & Wojan, 2007; Storper & Scott, 2009; Zheng, 2016). First, whether a place's cultural life is rather the cause for the clustering of highly talented people or the consequence remains ambiguous. For instance, Glaeser et al. (2010) have found that cities with a large fraction of high-skilled and high-earning people tend to have also a higher willingness to pay for cultural goods and quality of life, thus, there might be a reverse causality. Glaeser, Gyourko, and Saiz (2008) have illustrated that it is not primarily the cultural setting that drives regional growth, but the stockpiles of human capital, industrial density and the presence of research institutions and universities that stimulate innovation and entrepreneurship. A similar picture is drawn by Möller and Tubadji (2009). Using panel data for 323 West German regions, their findings suggest that talents are mostly attracted by favorable economic conditions like employment growth or wage bill rather than culture and places attractiveness. To overcome the chicken-egg problem, Falck et al. (2011) draw on a natural experiment. By going back in history, the authors claim that today's regional endowment with human capital is a result of places´ cultural heritage. Using German opera houses from the baroque era as a proxy for the cultural legacy of places, their findings reveal that culture affects the concentration of human-capital employees, and these employees promote local knowledge spillovers and shift a location to a higher growth

path. However, Bauer et al. (2015) demonstrate that this strategy is prone to show misleading results since cultural legacy and historical cultural goods are highly correlated with other historical traits and events.

The second weakness of previous research relates to the identification of the preferences that are held to motivate the locational choices of highly talented people (Bayer, Keohane, & Timmins, 2009; Clark, 2004; Hansen & Niedomysl, 2009; Pratt, 2008; Storper & Scott, 2009). None of these approaches develops an analytical framework that sufficiently justifies their selection of specific amenities and why they may play a role. For instance, Pratt (2011) criticizes Florida for deriving his relevant preferences simply on some interviewing and suggestive correlations. Similarly, Storper and Scott (2009) and Zheng (2016) also note that the selection of amenities that have been tested, seem to be randomly sampled rather than theoretically developed. Others criticize the lack of research that deploys structural techniques, such as explorative factor analysis or structural equation models, to identify possible interactions and structural patterns among the different types of amenities (Audretsch & Belitski, 2013; Bauer et al., 2015; Clark, 2004; McGranahan et al., 2010; Zheng, 2016).

3. SUMMARY AND RESEARCH GAPS

Yet, we observe large variations in economic activity across countries, regions, locations and time. Over the past 40 years, research finds various sources that explain these differences spanning economic, technological, demographic and institutional factors (Acs et al., 2016; Davidsson, 1995; Licht, 2010). Recently, scholars stress the increasing relevance of cultural aspects for stimulating entrepreneurship activity and creating a sound and competitive environment for innovation-driven growth.

Culture is multi-dimensional and a fuzzy construct. Over the years numerous theories have been carried that aim to explain the channels and causal mechanisms through which

culture affects economic activity (Freytag & Thurik, 2010; Licht, 2010). Today, the literature is vast and suffers from clear research domains and inconsistencies. It is the purpose of this article to review and provide a taxonomy of the existing literature. Out of all research, there seem to be three distinct but complementary streams. First, behavior-based studies that focus on how values and norms influence individual motivations and attitudes towards entrepreneurship and innovation activity. The second stream is relation-based and analyzes the effect of culture in facilitating spillover interactions. The third highlights local cultures as amenities that attract the spatial clustering of smart and talented people.

Nevertheless, across all strands and different approaches reviewed in this article, there seems to be one common agreement: Open and tolerant communities that place high value on individuality and diversity encourage creativity, boost competition and entrepreneurial activity, that in turn drives innovation and economic growth. Besides this consensus, many questions are open. Recent debates in academia especially revolve around two broad aspects that are yet still less-developed.

The first concerns the optimal level of personal freedom. Since Adam Smith (1776), there is an ongoing debate about the cost and benefits of freedom. Whereas one stream in literature outlines that decentralized market systems, with an eye on individuality and diversity, are crucial to stimulate creative entrepreneurship and innovation (Baumol, 2002; Friedman, 2009). Others are more concerned that market failure, high R&D investments, the cost of doubling research and the negative externalities of rising cultural diversity might trade-off the benefits of freedom and individuality against its economic costs. Intuitive evidence comes from history itself: Events like the Sputnik shock, the rise of China, India´s recent Mars Mission are all examples showing that decentralized factors and high personal freedom do not always hinder innovation, but in fact may be under certain conditions even more productive for high innovation outcomes. In this backdrop, scholars question whether the freedom-growth link is always linear or nuanced by additional institutional and social factors (Adam, 2011; Berggren

& Elinder, 2012). Nevertheless, studies within this context are scarce and future research is needed to clarify the channels and conditions under which diversity and a culture of personal freedom and individuality adds value and when it acts as a hindrance for economic development.

Another debate centers on the particular role of a place's cultural life and amenities. While we know for sure that a) high shares of skilled human capital are essential for regional economic development and b) these talents are likely to geographically cluster in tolerant locations with a rich supply on cultural amenities; little is known about what specific type of amenities matter. Previous research has stressed the relevance of a wide array of different factors – with contradictory results. Much of the divergent findings stem from inconsistencies in operationalization and methodology issues. Several recent studies have also wondered whether these mixed findings reside in wrong conceptions. For instance, it might be more a question of *who* rather than *what* is there. Several articles have reported that smart places are not necessarily also highly entrepreneurial places (Donegan et al., 2008; Lehmann & Seitz, 2017; Lehmann, Seitz, & Wirsching, 2017; Storper & Scott, 2009). Thus, it may be less about talents and human capital in general, but entrepreneurial personalities who seem to be more of a creative subgroup with different mindsets and preferences. As a result, those type of cultural attainment and amenities attractive to entrepreneurs may -in fact - not be the same as those for "regular" human capital or members of the creative class (Peck, 2005; Pratt, 2011; Storper & Scott, 2009). Nevertheless, empirical research studying and identifying subgroups and their location preferences is still limited. This void in the existing literature is unfortunate, because it leaves a daunting gap in the ability of both scholars and policy leaders to understand what factors shape urban and regional entrepreneurship.

This article aims to provide a critical review and taxonomy of the current state of the art in the vast field of culture and the social underpinnings of economic growth. We hope to shed

light on several key aspects and “blind spots” within this important literature segment and offer ideas for future research.

References

Acemoglu, D., & Robinson, J. A. (2005). *Economic origins of dictatorship and democracy*: Cambridge: Cambridge University Press.

Acs, Z. J., Audretsch, D. B., & Lehmann, E. E. (2013). The knowledge spillover theory of entrepreneurship. *Small Business Economics , 41*(4), 757-774.

Acs, Z. J., Audretsch, D. B., Lehmann, E. E., & Licht, G. (2016). National systems of innovation. *The Journal of Technology Transfer*, 1-12.

Acs, Z. J., Desai, S., & Hessels, J. (2008). Entrepreneurship, economic development and institutions. *Small Business Economics , 31*(3), 219-234.

Acs, Z. J., & Varga, A. (2002). Geography, endogenous growth, and innovation. *International Regional Science Review, 25*(1), 132-148.

Adam, F. (2011). Regional innovation performance in light of social-capital research and application. *Social Science Information, 50*(3-4), 414-428.

Adler, P. S., & Kwon, S.-W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review, 27*(1), 17-40.

Akçomak, I. S., & Ter Weel, B. (2009). Social capital, innovation and growth: Evidence from Europe. *European Economic Review, 53*(5), 544-567.

Albouy, D., Leibovici, F., & Warman, C. (2013). Quality of life, firm productivity, and the value of amenities across Canadian cities. *Canadian Journal of Economics/Revue Canadienne d'Economique, 46*(2), 379-411.

Asheim, B., & Gertler, M. (Eds.). (2005). *The Geography of Innovation*. Oxford: Oxford University Press.

Audretsch, D. B., Aldridge, T. T., & Sanders, M. (2011). Social capital building and new business formation A case study in Silicon Valley. *International Small Business Journal, 29*(2), 152-169.

Audretsch, D. B., & Belitski, M. (2013). The missing pillar: the creativity theory of knowledge spillover entrepreneurship. *Small Business Economics , 41*(4), 819-836.

Audretsch, D. B., & Feldman, M. P. (2004). Knowledge spillovers and the geography of innovation. *Handbook of Regional and Urban Economics, 4*, 2713-2739.

Audretsch, D. B., & Keilbach, M. (2004). Entrepreneurship capital and economic performance. *Regional Studies, 38*(8), 949-959.

Audretsch, D. B., & Keilbach, M. (2008). Resolving the knowledge paradox: Knowledge-spillover entrepreneurship and economic growth. *Research Policy, 37*(10), 1697-1705.

Audretsch, D. B., Keilbach, M. C., & Lehmann, E. E. (2006).*Entrepreneurship and Economic Growth*. Oxford: Oxford University Press.

Audretsch, D. B., Obschonka, M., Gosling, S. D., & Potter, J. (2017). A new perspective on entrepreneurial regions: linking cultural identity with latent and manifest entrepreneurship. *Small Business Economics , 48*(3), 681-697.

Baptista, R. (2010). Culture, Political Institutions and the Regulation of Entry *Entrepreneurship and Culture* (pp. 55-77). New York: Springer.

Barrutia, J. M., & Echebarria, C. (2010). Social capital, research and development, and innovation: An empirical analysis of Spanish and Italian regions. *European Urban and Regional Studies, 17*(4), 371–385.

Bauer, T. K., Breidenbach, P., & Schmidt, C. M. (2015). “Phantom of the Opera” or “Sex and the City”? Historical amenities as sources of exogenous variation. *Labour Economics, 37*, 93-98.

Baumol, W. J. (2002). *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*: Princeton: Princeton University Press.

Bayer, P., Keohane, N., & Timmins, C. (2009). Migration and hedonic valuation: The case of air quality. *Journal of Environmental Economics and Management, 58*(1), 1-14.

Berggren, N. (2003). The benefits of economic freedom: a survey. *The Independent Review, 8*(2), 193-211.

Berggren, N., & Elinder, M. (2012). Is tolerance good or bad for growth? *Public Choice, 150*(1-2), 283-308.

Beugelsdijk, S., & Klasing, M. J. (2013). Cultural Diversity. *Available at SSRN: https://ssrn.com/abstract=2336045 or http://dx.doi.org/10.2139/ssrn.2336045*.

Beugelsdijk, S., & Maseland, R. (2010). *Culture in Economics: History, Methodological Reflections and Contemporary Applications*. Cambridge: Cambridge University Press.

Beugelsdijk, S., & Van Schaik, T. (2005). Social capital and growth in European regions: an empirical test. *European Journal of Political Economy, 21*(2), 301-324.

Bjørnskov, C. (2005). Does political ideology affect economic growth? *Public Choice, 123*(1-2), 133-146.

Blair, J. P., Carroll, M., & Rowe, J. (2009). Social capital in local economic development. *Theories of Local Economic Development–Linking Theory to Practice*, 265-281.

Burkhart, R. E., & Lewis-Beck, M. S. (1994). Comparative democracy: the economic development thesis. *American Political Science Review, 88*(04), 903-910.

Burt, R. S. (2009). *Structural holes: The social structure of competition*: Harvard university press.

Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). Smart cities in Europe. *Journal of Urban Technology, 18*(2), 65-82.

Chell, E., & Baines, S. (2000). Networking, entrepreneurship and microbusiness behaviour. *Entrepreneurship & Regional Development, 12*(3), 195-215.

Clark, T. N. (Ed.). (2004). *Urban amenities: lakes, opera, and juice bars: do they drive development?* In *The city as an entertainment machine* (pp. 103-140). Emerald Group Publishing Limited.

Clark, T. N., Lloyd, R., Wong, K. K., & Jain, P. (2002). Amenities drive urban growth. *Journal of urban affairs, 24*(5), 493-515.

Cooke, P., Clifton, N., & Oleaga, M. (2005). Social capital, firm embeddedness and regional development. *Regional Studies, 39*(8), 1065-1077.

Cushing, R., Florida, R., & Gates, G. (2002). When social capital stifles innovation. *Harvard Business Review, 80*(8), 20.

Davidsson, P. (1995). Culture, structure and regional levels of entrepreneurship. *Entrepreneurship & Regional Development, 7*(1), 41-62.

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing, 18*(3), 301-331.

Davidsson, P., & Wiklund, J. (1997). Values, beliefs and regional variations in new firm formation rates. *Journal of Economic Psychology, 18*(2), 179-199.

Delhey, J., & Newton, K. (2003). Who trusts?: The origins of social trust in seven societies. *European Societies, 5*(2), 93-137.

Denzau, A. T., & North, D. C. (1994). Shared mental models: ideologies and institutions. *Kyklos, 47*(1), 3-31.

Donegan, M., Drucker, J., Goldstein, H., Lowe, N., & Malizia, E. (2008). Which indicators explain metropolitan economic performance best? Traditional or creative class. *Journal of the American Planning Association, 74*(2), 180-195.

Etzioni, A. (1987). Entrepreneurship, adaptation and legitimation: a macro-behavioral perspective. *Journal of Economic Behavior & Organization, 8*(2), 175-189.

Evans, G. (2009). Creative cities, creative spaces and urban policy. *Urban Studies, 46*(5-6), 1003-1040.

Falck, O., Fritsch, M., & Heblich, S. (2011). The phantom of the opera: Cultural amenities, human capital, and regional economic growth. *Labour Economics, 18*(6), 755-766.

Ferguson, M., Ali, K., Olfert, M., & Partridge, M. (2007). Voting with their feet: jobs versus amenities. *Growth and Change, 38*(1), 77-110.

Fershtman, C., & Weiss, Y. (1993). Social status, culture and economic performance. *The Economic Journal, 103*(419), 946-959.

Fleming, L., King, C., & Juda, A. I. (2007). Small Worlds and Regional Innovation. *Organization Science, 18*(6), 938-954.

Florida, R. (1995). Toward the learning region. *Futures, 27*(5), 527-536.

Florida, R. (2002). *The rise of the creative class and how it's transforming work, leisure, community and everyday life*. New York: Basic Books.

Florida, R. (2014). The creative class and economic development. *Economic Development Quarterly, 28*(3), 196-205.

Florida, R., & Gates, G. (2003). Technology and tolerance: The importance of diversity to high-technology growth. *Research in Urban Policy, 9*(1), 199-219.

Franke, R. H., Hofstede, G., & Bond, M. H. (1991). Cultural roots of economic performance: A research notea. *Strategic Management Journal, 12*(S1), 165-173.

Freytag, A., & Thurik, A. R. (2010). *Entrepreneurship and Culture*. In *Entrepreneurship and culture (pp 1-8)*. Heidelberg: Springer, Berlin

Freytag, A., & Thurik, R. (2007). Entrepreneurship and its determinants in a cross-country setting. *Journal of Evolutionary Economics, 17*(2), 117-131.

Friedman, M. (2009). *Capitalism and freedom*: University of Chicago Press.

Fritsch, M., & Wyrwich, M. (2012). The long persistence of regional entrepreneurship culture: Germany 1925-2005. *DIW Berlin Discussion Paper No. 1224. Available at SSRN:http://ssrn.com/abstract=2111984*.

Gerring, J., Bond, P., Barndt, W. T., & Moreno, C. (2005). Democracy and economic growth: A historical perspective. *World Politics, 57*(03), 323-364.

Glaeser, E. L., Gyourko, J., & Saiz, A. (2008). Housing supply and housing bubbles. *Journal of Urban Economics, 64*(2), 198-217.

Glaeser, E. L., Kahn, M. E., & Rappaport, J. (2008). Why do the poor live in cities? The role of public transportation. *Journal of Urban Economics, 63*(1), 1-24.

Glaeser, E. L., Kolko, J., & Saiz, A. (2001). Consumer city. *Journal of Economic Geography, 1*(1), 27-50.

Glaeser, E. L., Resseger, M., & Tobio, K. (2009). Inequality in cities. *Journal of Regional Science, 49*(4), 617-646.

Glaeser, E. L., Rosenthal, S. S., & Strange, W. C. (2010). Urban economics and entrepreneurship. *Journal of Urban Economics, 67*(1), 1-14.

Goldschmidt, N., Zweynert, J., Nerré, B., & Schuß, H. (2006). Culture and economics. *Intereconomics*, *41*(4), 176-199.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology, 78*(6), 1360-1380.

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes? *The Journal of Economic Perspectives, 20*(2), 23-48.

Hansen, H. K., & Niedomysl, T. (2009). Migration of the creative class: evidence from Sweden. *Journal of Economic Geography, 9*(2), 191-206.

Hauser, C., Tappeiner, G., & Walde, J. (2007). The learning region: the impact of social capital and weak ties on innovation. *Regional Studies, 41*(1), 75-88.

Hayton, J. C., George, G., & Zahra, S. A. (2002). National culture and entrepreneurship: A review of behavioral research. *Entrepreneurship Theory and Practice, 26*(4), 33.

Helliwell, J. F. (1994). Empirical linkages between democracy and economic growth. *British Journal of Political Science, 24*(02), 225-248.

Henrekson, M. (2005). Entrepreneurship: a weak link in the welfare state? *Industrial and Corporate Change, 14*(3), 437-467.

Hessels, J., van Gelderen, M., & Thurik, R. (2008). Drivers of entrepreneurial aspirations at the country level: the role of start-up motivations and social security. *International Entrepreneurship and Management Journal, 4*(4), 401-417.

Hirschle, J., & Kleiner, T.-M. (2014). Regional cultures attracting interregional migrants. *Urban Studies, 51*(16), 3348-3364.

Hofstede, G. (1993). Cultural constraints in management theories. *The Academy of Management Executive, 7*(1), 81-94.

Huggins, R., & Thompson, P. (2014). Culture, entrepreneurship and uneven development: a spatial analysis. *Entrepreneurship & Regional Development, 26*(9-10), 726-752.

Inglehart, R. (2004). *Human beliefs and values: A cross-cultural sourcebook based on the 1999-2002 values surveys*: Siglo XXI.

Inglehart, R., Foa, R., Peterson, C., & Welzel, C. (2008). Development, freedom, and rising happiness: A global perspective (1981–2007). *Perspectives on Psychological Science, 3*(4), 264-285.

Jacobs, J. (1970). *The economy of cities*. New York: Random House.

Jaffe, A. B., Trajtenberg, M., & Henderson, R. (1993). Geographic localization of knowledge spillovers as evidenced by patent citations. *the Quarterly Journal of Economics, 108*(3), 577-598.

Johnson, J. P., & Lenartowicz, T. (1999). Culture, freedom and economic growth: do cultural values explain economic growth? *Journal of World Business, 33*(4), 332-356.

Knack, S., & Keefer, P. (1995). Institutions and economic performance: cross-country tests using alternative institutional measures. *Economics & Politics, 7*(3), 207-227.

Knudsen, B., Florida, R., Stolarick, K., & Gates, G. (2008). Density and Creativity in U.S. Regions. *Annals of the Association of American Geographers, 98*(2), 461-478.

Kotkin, J. (2013). Richard Florida concedes the limits of the creative class. *The Daily Beast*.
Kreiser, P. M., Marino, L. D., Dickson, P., & Weaver, K. M. (2010). Cultural influences on entrepreneurial orientation: The impact of national culture on risk taking and proactiveness in SMEs. *Entrepreneurship Theory and Practice, 34*(5), 959-983.
Krueger, N., Liñán, F., & Nabi, G. (2013). Cultural values and entrepreneurship. *Entrepreneurship & Regional Development, 25*(9-10), 703-707.
Kuratko, D. F. (2005). The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship Theory and Practice, 29*(5), 577-598.
Landry, R., Amara, N., & Lamari, M. (2002). Does social capital determine innovation? To what extent? *Technological Forecasting and Social Change, 69*(7), 681-701.
Lechner, C., Dowling, M., & Welpe, I. (2006). Firm networks and firm development: The role of the relational mix. *Journal of Business Venturing, 21*(4), 514-540.
Lee, N. (2015). Migrant and ethnic diversity, cities and innovation: Firm effects or city effects? *Journal of Economic Geography, 15*(4), 769-796.
Lee, S. Y., Florida, R., & Acs, Z. J. (2004). Creativity and entrepreneurship: a regional analysis of new firm formation. *Regional Studies, 38*(8), 879-891.
Leenders, R. T. A., Van Engelen, J. M., & Kratzer, J. (2003). Virtuality, communication, and new product team creativity: a social network perspective. *Journal of Engineering and Technology Management, 20*(1), 69-92.
Lehmann, E. E. (Ed.). (2015). *The role of universities in local and regional competitiveness*. Oxford: Oxford University Press.
Lehmann, E. E., & Seitz, N. (2017). Creativtiy and Entrepreneurship: Culture, Subcultures and the impact on new venture creation. State-of-the-Art and some descriptive statistics and data. In M. Wagner, J. W. Pasola & T. Burger-Helmchen (Eds.), *Global Management of Creativity* (pp. 97-120). London: Routhledge.
Lehmann, E. E., Seitz, N., & Wirsching, K. (2017). Smart finance for smart places to foster new venture creation. *Economia e Politica Industriale, 44*(1), 51-75.
Lerner, J. (2009). The empirical impact of intellectual property rights on innovation: Puzzles and clues. *The American Economic Review, 99*(2), 343-348.
Leydesdorff, L., & Etzkowitz, H. (1996). Emergence of a Triple Helix of university—industry—government relations. *Science and Public Policy, 23*(5), 279-286.
Licht, A. N. (2010). Entrepreneurial motivations, culture, and the law *Entrepreneurship and culture* (pp. 11-40). New York: Springer.
Licht, A. N., Goldschmidt, C., & Schwartz, S. H. (2007). Culture rules: The foundations of the rule of law and other norms of governance. *Journal of Comparative Economics, 35*(4), 659-688.
Licht, A. N., & Siegel, J. I. (Eds.). (2006). *The social dimensions of entrepreneurship*. Oxford: Oxford University Press.
Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*(1), 3-42.
McClelland, D. C. (1961). *The achievement society*. Princenton, NJ: Von Nostrand.
McClelland, D. C. (1965). N achievement and entrepreneurship: A longitudinal study. *Journal of Personality and Social Psychology, 1*(4), 389-392.

McFadyen, M. A., & Cannella, A. A. (2004). Social capital and knowledge creation: Diminishing returns of the number and strength of exchange relationships. *Academy of Management Journal, 47*(5), 735-746.

McGranahan, D. A., & Wojan, T. (2007). Recasting the creative class to examine growth processes in rural and urban counties. *Regional Studies, 41*(2), 197-216.

McGranahan, D. A., Wojan, T. R., & Lambert, D. M. (2010). The rural growth trifecta: outdoor amenities, creative class and entrepreneurial context. *Journal of Economic Geography, 11*(3), 529-557.

McGrath, R. G., MacMillan, I. C., Yang, E. A.-Y., & Tsai, W. (1992). Does culture endure, or is it malleable? Issues for entrepreneurial economic development. *Journal of Business Venturing, 7*(6), 441-458.

Mellander, C., Florida, R., & Stolarick, K. (2011). Here to stay—the effects of community satisfaction on the decision to stay. *Spatial Economic Analysis, 6*(1), 5-24.

Möller, J., & Tubadji, A. (2009). The Creative Class, Bohemians and Local Labor Market Performance: A Micro-data Panel Study for Germany 1975—2004. *Jahrbücher für Nationalökonomie und Statistik*, 270-291.

Morris, M. H., Davis, D. L., & Allen, J. W. (1994). Fostering corporate entrepreneurship: Cross-cultural comparisons of the importance of individualism versus collectivism. *Journal of International Business Studies*, 65-89.

Mueller, S. L., & Thomas, A. S. (2001). Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness. *Journal of Business Venturing, 16*(1), 51-75.

Nathan, M., & Lee, N. (2013). Cultural Diversity, Innovation, and Entrepreneurship: Firm-level Evidence from London. *Economic Geography, 89*(4), 367-394.

Niebuhr, A. (2010). Migration and innovation: Does cultural diversity matter for regional R&D activity? *Papers in Regional Science, 89*(3), 563-585.

North, D. C. (1994). Institutions matter. *Economic History, 9411004*.

Obschonka, M., Stuetzer, M., Gosling, S. D., Rentfrow, P. J., Lamb, M. E., Potter, J., et al. (2015). Entrepreneurial Regions: do macro-psychological Cultural Characteristics of Regions help solve the "Knowledge Paradox" of Economics? *PloS one, 10*(6), e0129332.

Powell, B., & Rodet, C. S. (2012). Praise and profits: Cultural and institutional determinants of entrepreneurship. *Journal of Private Enterprise, 27*(2), 19.

Pratt, A. C. (2008). Creative cities: the cultural industries and the creative class. *Geografiska Annaler: Series B, Human Geography, 90*(2), 107-117.

Pratt, A. C. (2011). The cultural contradictions of the creative city. *City, culture and society, 2*(3), 123-130.

Przeworski, A., Limongi, F., & Giner, S. (1995). Political regimes and economic growth *Democracy and Development* (pp. 3-27). New York: Springer.

Putnam, R. D., Leonardi, R., & Nanetti, R. Y. (1994). *Making democracy work: Civic traditions in modern Italy*: Princeton university press.

Qian, H. (2013). Diversity versus tolerance: The social drivers of innovation and entrepreneurship in US cities. *Urban Studies, 50*(13), 2718-2735.

Rappaport, J. (2008). Consumption amenities and city population density. *Regional Science and Urban Economics, 38*(6), 533-552.

Rauch, A., Frese, M., Wang, Z.-M., & Unger, J. (2010). National cultural values, firm's cultural orientations, innovation, and performance: testing cultural universals and specific contingencies across five countries. *Frontiers of Entrepreneurship Research, 30*(15), 4.

Reynolds, P. D. (1999). Creative destruction: source or symptom of economic growth. *Entrepreneurship, small and medium-sized enterprises and the macroeconomy*, 97-136.

Reynolds, P. D., Hay, M., Bygrave, W. D., Camp, S. M., & Autio, E. (2000). Global entrepreneurship monitor. *Executive Report*.

Riggs, W., & Von Hippel, E. (1994). Incentives to innovate and the sources of innovation: the case of scientific instruments. *Research Policy, 23*(4), 459-469.

Roback, J. (1982). Wages, rents, and the quality of life. *The Journal of Political Economy*, 1257-1278.

Rodríguez-Pose, A. (2013). Do institutions matter for regional development? *Regional Studies, 47*(7), 1034-1047.

Romer, P. M. (1994). The origins of endogenous growth. *The Journal of Economic Perspectives, 8*(1), 3-22.

Rosenthal, S. S., & Strange, W. C. (2008). The attenuation of human capital spillovers. *Journal of Urban Economics, 64*(2), 373-389.

Rossberger, R. J., & Krause, D. E. (2012). National culture, heterogeneity and innovation: New insights into the relationship between the GLOBE dimensions and national level innovation. *GSTF Journal of Law and Social Sciences (JLSS), 2*(1), 84.

Ruef, M., Aldrich, H. E., & Carter, N. M. (2003). The structure of founding teams: Homophily, strong ties, and isolation among US entrepreneurs. *American Sociological Review*, 195-222.

Santarelli, E., & Tran, H. T. (2013). The interplay of human and social capital in shaping entrepreneurial performance: the case of Vietnam. *Small Business Economics , 40*(2), 435-458.

Saxenian, A. (1996). Beyond boundaries: Open labor markets and learning in Silicon Valley. *The boundaryless career: A new employment principle for a new organizational era*, 23, 39.

Schwartz, S. H. (2006). A theory of cultural value orientations: Explication and applications. *Comparative Sociology, 5*(2), 137-182.

Shane, S. A. (1992). Why do some societies invent more than others? *Journal of Business Venturing, 7*(1), 29-46.

Shane, S. A. (1993). Cultural influences on national rates of innovation. *Journal of Business Venturing, 8*(1), 59-73.

Shane, S. A. (1995). Uncertainty Avoidance and the Preference for Innovation Championing Roles. [journal article]. *Journal of International Business Studies, 26*(1), 47-68.

Simonton, D. K. (2000). Creativity: Cognitive, personal, developmental, and social aspects. *American Psychologist, 55*(1), 151.

Singh, R. P., Hills, G. E., Lumpkin, G., & Hybels, R. C. (1999). *The entrepreneurial opportunity recognition process: Examining the role of self-perceived alertness and social networks.* Paper presented at the Academy of Management Proceedings.

Smallbone, D., Kitching, J., & Athayde, R. (2010). Ethnic diversity, entrepreneurship and competitiveness in a global city. *International Small Business Journal, 28*(2), 174-190.

Storper, M., & Scott, A. J. (2009). Rethinking human capital, creativity and urban growth. *Journal of Economic Geography, 9*(2), 147-167.

Stuetzer, M., Obschonka, M., Brixy, U., Sternberg, R., & Cantner, U. (2014). Regional characteristics, opportunity perception and entrepreneurial activities. *Small Business Economics , 42*(2), 221-244.

Sun, H. (2009). A meta-analysis on the influence of national culture on innovation capability. *International Journal of Entrepreneurship and Innovation Management, 10*(3-4), 353-360.

Taylor, M. Z., & Wilson, S. (2012). Does culture still matter?: The effects of individualism on national innovation rates. *Journal of Business Venturing, 27*(2), 234-247.

Thomas, A. S., & Mueller, S. L. (2000). A case for comparative entrepreneurship: Assessing the relevance of culture. *Journal of International Business Studies*, 287-301.

Tian, X., & Wang, T. Y. (2014). Tolerance for failure and corporate innovation. *Review of Financial Studies, 27*(1), 211-255.

Torjman, L., & Worren, J. (2010). Culture of Entrepreneurship. *The Open Source Business Resource*, 4.

Tubadji, A. (2012). Culture-based development: empirical evidence for Germany. *International Journal of Social Economics, 39*(9), 690-703.

Ullman, E. L. (1954). Amenities as a factor in regional growth. *Geographical Review*, 119-132.

Urban, B. (2006). Entrepreneurial self-efficacy in a multicultural society: Measures and ethnic differences. *SA Journal of Industrial Psychology, 32*(1), p. 2-10.

Van Stel, A. J., & Nieuwenhuijsen, H. R. (2004). Knowledge spillovers and economic growth: an analysis using data of Dutch regions in the period 1987–1995. *Regional Studies*, *38*(4), 393-407.

Wagener, A. (2000). Entrepreneurship and Social Security. *Public Finance Analysis, 57*(3), 284-315.

Wagner, J., & Sternberg, R. (2004). Start-up activities, individual characteristics, and the regional milieu: Lessons for entrepreneurship support policies from German micro data. *The Annals of Regional Science, 38*(2), 219-240.

Weber, M. (1905/2002). *The Protestant Ethic and the Spirit of Capitalism: and other writings*: Penguin.

Welter, F., & Smallbone, D. (2006). Exploring the role of trust in entrepreneurial activity. *Entrepreneurship Theory and Practice, 30*(4), 465-475.

Wennekers, S., Thurik, R., van Stel, A., & Noorderhaven, N. (2007). Uncertainty avoidance and the rate of business ownership across 21 OECD countries, 1976–2004. *Journal of Evolutionary Economics, 17*(2), 133-160.

Wennekers, S., Van Wennekers, A., Thurik, R., & Reynolds, P. (2005). Nascent entrepreneurship and the level of economic development. *Small Business Economics , 24*(3), 293-309.

Westlund, H., & Adam, F. (2010). Social capital and economic performance: A meta-analysis of 65 studies. *European Planning Studies, 18*(6), 893-919.

Wyrwich, M., Stuetzer, M., & Sternberg, R. (2016). Entrepreneurial role models, fear of failure, and institutional approval of entrepreneurship: a tale of two regions. *Small Business Economics , 46*(3), 467-492.

Zheng, L. (2016). What city amenities matter in attracting smart people? *Papers in Regional Science, 95*(2), 309-327.

III. Article 2: Freedom and Innovation: A Country and State Level Analysis

Lehmann, E. E. & Seitz, N. (2017). Freedom and innovation: a country and state level analysis. The Journal of Technology Transfer, 42(5), 1009-1029.
Doi 10.1007/s10961-016-9478-3

Abstract. Research underlines the importance of socio-cultural factors when establishing a supportive environment for innovation and entrepreneurship growth. Scholars discuss different aspects, ranging from cultural attitudes and religious norms, to aspects of tolerance and social freedom. Following on research tradition, this paper analyzes the freedom-innovation relationship using a hand collected data set of 57 countries and the 50 U.S. states over a three year period. We argue and test whether the slope of the freedom-innovation link is shaped by and trades- off the costs and benefits of either weak or strong social ties within a country. Our empirical findings support a positive relationship between the freedom-innovativeness-slope, but not a negative or inverted U-shaped relationship.

JEL Classification O3 – P00

Keywords: National innovation systems – entrepreneurship –diversity – economic geography

IV. Article 3: Tolerance and Innovation: the Role of Institutional and Social Trust

Audretsch, D. B., Seitz, N. & Rouch, K. M. (2017). Tolerance and innovation: the role of institutional and social trust. *Eurasian Business Review*, *8*(1), 71-92.
Doi 10.1007/s40821-017-0086-4

Abstract. The impact of freedom on economic growth has attracted significant attention from researchers and policy makers around the globe. Besides notions of economic freedom, a rapidly growing body of literature stresses the role of personal freedoms and tolerance. It is argued that tolerance is essential for innovation because its creates an open environment where creativity and knowledge spillovers. However, mixed empirical evidence suggests that the relationship between tolerance and freedom is more nuanced towards additional social factors, such as the role of trust and other institutions. This paper re-investigates whether and to which extent notions of social and institutional trust affect the impact of tolerance on innovation using an original data set spanning three broad regions of the global and the 50 U.S. states and 31 Chinese regions. Our findings support that tolerance and trust play an important role in stimulating innovation performance, however, the exact nature of the relationships is influenced by economic development. Our study fits into current debate about the role of sociocultural and institutional underpinnings in national innovation systems. As well as it aims to contribute to the almost currently re-starting debate about the influence of freedom and the advantage and disadvantages of diversity on economic performance.

JEL Classification: 030 - 043 - 057

Keywords: Innovation – freedom – tolerance – trust

V. Article 4: Cultural Amenities, Subcultures and Entrepreneurship:

Audretsch, D. B., Seitz, N. & Lehmann, E. E. (2017). Cultural Amenities, Subcultures and Entrepreneurship. *SSRN working paper series*.
Doi 10.2139/ssrn.2932887

Abstract. Paradoxically, what powers knowledge-based economies is not knowledge, it is their capacity to create new products and services through innovation and place-based entrepreneurship. Previous research has outlined the importance of places attractiveness and culture for creating a supportive environment where competition, creativity and entrepreneurship can flourish. However, what specific kind of culture is attractive and actually needed, remains both unknown and controversial. A rising stream of research has focused on the cultural amenities offered, such as operas, museums and theaters, and how they affect entrepreneurial outcomes – yet, with mixed results. This paper aim to contribute to the existing literature by positing that rather than mainstream culture it is subcultural life that explains why some places emerge as creative hotspots while others do not. We utilize explorative factor analysis to compare the impact of different proxies measuring subcultural amenities against measures which have traditionally been used to reflect „mainstream" culture on startup rates in German cities. Our findings confirm that the co-presence of subcultural amenities is positively associated to entrepreneurship. By contrast, mainstream culture has no significant impact on local startup rates. These findings make an important contribution to the recent controversy within the regional studies literature and provide insights and guidance for thought leaders in policy and urban planning.

JEL Classification: O30, 018, R11, J24

Keywords: Startups, creative Class, culture, subculture, knowledge spillovers

1. INTRODUCTION

Regional economic development across the globe has turned to entrepreneurship as an engine for enhancing growth. Over past decades, this had led to extensive investments by policy makers to create an environment and local context conducive to entrepreneurship and innovation. In searching for such a beneficial environment, both scholars and policy makers have shifted more and more away from "hard" physical assets towards more "softer" locational factors, such as milieus, culture and the enhancing of the attractiveness of the particular place (Hopp & Stephan, 2012; Huggins & Thompson, 2014). The basic hypothesis here is that place-based´ entrepreneurship activity is the product of high human capital and creative talents that today are highly mobile and feel especially attracted to places offering a high quality of life and amenities (Bauer, Breidenbach, & Schmidt, 2015; Falck, Fritsch, & Heblich, 2011; Florida, Mellander, & Stolarick, 2008; S. Y. Lee, Florida, & Gates, 2010). Yet, our knowledge about what specific type of amenities actually enhances the quality of life for those talented people is still limited. While we know it matters, we are less sure about what matters. An influential stream of literature has suggested that well-educated and high human capital workers feel especially attracted to tolerant and open environments that provide a rich supply on cultural offerings, including interesting cultural scenes and their corresponding facilities, like art galleries, museums or operas. (Bauer et al., 2015; Clark, 2004; Falck et al., 2011; Florida, 2002; Morgan & Ren, 2012; Pratt, 2011; Roback, 1982; Scott, 1999, 2006b; Thiel, 2015).

However, a more nuanced view has been posited by Peck (2005), Hollands (2008), and Pratt (2011), who suggest that smart places are not necessarily highly entrepreneurial places. Rather, they provide a compelling argument that what fuels place-based entrepreneurship is less about human capital or the creative class in general, and more about the co-presence of a "creative underclass" of entrepreneurs that can transform a place into a startup hotspot. Thus, the cultural

amenities attractive to and serving as a beacon for this creative underclass of entrepreneurs may, in fact, not be the same as those for mainstream human capital and the creative class (Peck, 2005; Pratt, 2011; Storper & Scott, 2009).

Despite this controversy in both the scholarly literature as well as among thought leaders in public policy and business, the particular type of cultural amenities that actually play an important role and serve as a beacon attracting the creative underclass has yet not been studied. This void in the entrepreneurship literature is unfortunate, because it leaves a daunting gap in the ability of both scholars and the policy community to understand what exactly attracts the creative class and underclass to a place. The purpose of this paper to fill this gap in the literature by explicitly comparing the influence of cultural amenities versus subcultural amenities on local startup activity.

The remainder of the paper is structured as followed. Section two draws on the extant literature to develop the main hypotheses suggesting that a vibrant cultural life is conducive for attracting and retaining creative milieus, but that the particular kind of culture that is beneficial is considerably more nuanced: In section three, , we develop hypothesis that entrepreneurship activity needs some kind of "*spiritus loci"* for open-mindedness and experimentalism, and that this cultural spirit is likely to be found in places characterized by a vibrant subcultural scene rather than mainstream culture, which, by contrast, is more likely to be conducive to formal human capital and the social establishment. Our study builds onto the recent entrepreneurship literature focusing on the impact of place-based amenities attracting creative workers on entrepreneurial activity. By testing the impact of subcultures on startup activity, we try to shed light on a key link that has been largely overlooked and remains missing in the extant literature in entrepreneurship and regional development of exactly how -- culture shapes entrepreneurially networks and spillovers. This paper makes a key contribution by being the first in the literature to introduce therefore a model of measuring subcultures and compare their

influence against measures of mainstream culture. Our research makes an important contribution to the entrepreneurship literature by identifying those factors conducive to creative places, in contrast to those factors conducive to smart places. A secondary contribution of the paper to the entrepreneurship literature is that it adds to our knowledge about entrepreneurial milieus and their preferences. Section four introduces the data set and methodology used to undertake our empirical analysis. The fifth Section discusses our findings in the backdrop of previous results in the entrepreneurship and limitations. In the last section, we provide a conclusion highlighting the main findings and provide an outlook for future research and policy implications.

2. ENTREPRENEURSHIP AND AMENITIES

An important set of studies in the regional studies literature has provided a compelling link between entrepreneurship and the competitiveness of regions as being driven by the ability to exploit new knowledge via innovation and entrepreneurship (Acs & Varga, 2002; Audretsch & Feldman, 2004; Florida, 2013). These studies have triggered an explosion of research attempting to quantify and identify the specific sources that promote high innovation and regional entrepreneurship. One major focus centers on the spatial concentration of knowledge and human creativity as measured by better educated and highly talented people (Audretsch & Feldman, 2004; Berry & Glaeser, 2005; Cushing, Florida, & Gates, 2002; Florida, 2002; Jacobs, 1970; Moretti, 2004; Rauch et al., 2013; Shapiro, 2006). Talented people, of course, are not evenly distributed across geographic space. Research has identified a numerous of necessary conditions, ranging from local industrial clusters (Acs, Audretsch, & Lehmann, 2013; Lehmann & Menter, 2016; Porter, 2000), top universities, the supply on educational attainment (Kuratko, 2005; Lehmann, 2015; Leydesdorff & Etzkowitz, 1996), income levels (Acs, Desai, & Hessels, 2008; Glaeser, Resseger, & Tobio, 2009; Wennekers, Van Wennekers, Thurik, & Reynolds,

2005), thick labor markets and established firms, or local accessibility (Audretsch & Belitski, 2013; Caragliu, Del Bo, & Nijkamp, 2011; Glaeser, Kahn, & Rappaport, 2008; Knudsen, Florida, Stolarick, & Gates, 2008; Saxenian, 1996), to play an important role for a high share of regional human capital. In addition to the, primarily physical, factors, which are commonly referred to as "hard" factors, a recent strand in research has stressed the significant role of "softer", more life-style-oriented factors, such as the attractiveness of a place and other social characteristics, which is commonly referred to in the literature as "amenities" (Bauer et al., 2015; Clark, 2004; Falck et al., 2011; Lehmann & Seitz, 2017; Rappaport, 2008; Rosenthal & Strange, 2008; Zheng, 2016). The basic argument is that in open and post-industrial economies, talented people are highly mobile and make their locational choices principally in response to quality of life rather than solely on wages (e.g. Florida, 2002; Inglehart, Foa, Peterson, & Welzel, 2008; Landry, 2008; Storper & Scott, 2009).

However, the question of which specific amenities actually make a place attractive to highly talented people, and consequently entrepreneurs has recently become the focus of a widespread discussion in the literature (Bauer et al., 2015; Hirschle & Kleiner, 2014; McGranahan, Wojan, & Lambert, 2010; Storper & Scott, 2009; Zheng, 2016). Over the last several years, a number of different types of amenities have been analyzed - yet without consistent findings. The literature here can be broadly divided into two basic categories. The first category is based on econometric analysis testing the impact of the several key forces that have been posited in the literature to influence the clustering of high human capital (e.g. Berry & Glaeser, 2005; Glaeser, Kolko, & Saiz, 2001; Glaeser, Rosenthal, & Strange, 2010; Lloyd & Clark, 2001). The extant literature is vast and suggests that a widely ranging set of locational amenities is particularly influential, ranging from exogenously given factors, such as weather conditions or location with close geographic proximity to a coast line or rivers , to a number of endogenous factors, such as quality of transport infrastructure, entertainment amenities,

housing quality and security considerations (e.g. Bayer, Keohane, & Timmins, 2009; Berry & Glaeser, 2005; Florida, Mellander, & Stolarick, 2016; Glaeser & Gottlieb, 2006; Glaeser et al., 2001; Glaeser et al., 2010); In addition, there seem to be possible interactions and subsidization effects between the different types of amenities (Storper & Scott, 2009). For instance, Berry and Glaeser (2005) suggest that warm, dry winters, especially the average temperature in January, matters most in explaining high levels of local human capital, but other amenities are also important and might compensate for possible shortcomings in other amenities. Thus, cold places can offset the role of a warm climate by providing safe neighborhoods, reasonable housing prices and good school and education facilities (Berry & Glaeser, 2005; Glaeser & Gottlieb, 2006; Storper & Scott, 2009). Nevertheless, one key insight emerging from of this line of research is that specific amenities associated with consumption opportunities, such as entertainment , restaurants and other cultural facilities have grown in importance across all type of places, even for those places that were originally organized around industrial production (Clark, Lloyd, Wong, & Jain, 2002; Falck et al., 2011; Glaeser & Gottlieb, 2006; Glaeser et al., 2001; McGranahan et al., 2010; Möller & Tubadji, 2009; Rappaport, 2008).

Similar evidence can be found in the urban sociology literature. For instance, G. Evans (2009) and Clark et al. (2002) have reported a general decline in the explanatory power of conventional variables affecting places´ growth while local attractions, such as orchestras, parks, museums art galleries or architecture, has raised in relevance. They argue that in post-industrial, information economies there has been generally a great rise of leisure pursuit compared to work (Clark et al., 2002; Inglehart et al., 2008; Rappaport, 2008; Zheng, 2016). Leisure activities need time, money and certain amenities to satisfy those desires. Thus, places transforming into “entertainment machines” tend to focus on attracting and retaining a modern class of affluent and highly talented people (Bauer et al., 2015; Lloyd & Clark, 2001; Rappaport, 2008).

Extending this first strand of the literature, the second major strand refines some of the above-mentioned arguments and provides a much broader perspective. Instead of focusing on individual attractions, research here has stressed the general importance of local culture for attracting human capital (Beugelsdijk, 2010; Cushing et al., 2002; Davidsson, 1995; Florida, 2014; Hirschle & Kleiner, 2014). In contrast to the first strand of research, those studies do not have an exclusive focus on human capital, in terms of classical human capital theory, i.e. well-educated and skilled workers, but rather analyze the population movements of a specific, highly disaggregated subgroups of human capital that is associated with high creative outcomes, innovation and entrepreneurship (Florida, 2003; Lehmann & Seitz, 2017; Peck, 2005; Pratt, 2011; Scott, 2006a; Zheng, 2016). Most prominent here is Florida´s (2004) work on the theory of the creative class. Pioneering work is also associated with Park, Burgess, and McKenzie (1925/1984) or Jacob´s (1970) seminal writings about the creative cities, and could even date back to Marshall´s (1924) initial ideas of an "industrial atmosphere". All approaches here suggest that a concentration of high human capital in general, but more specifically the co-presence of a creative milieu makes places highly innovative. These milieus consist of highly talented people that are not necessarily formally well educated but work primarily in a creative, problem-solving manner (Clifton & Cooke, 2009; Comunian, 2010; Florida, 2002; Landry, 2008). These creative talents, which Florida calls "creative class", search for other types of amenities compared to conventional human capital. Due to their work ethos, they choose place-specific cultural mindset over conventional attractions, such as museums, cinema, housing conditions etc.; They search for places that welcome divergent thinking, support experimentalism and tolerance for diversity (Cushing et al., 2002; Florida & Gates, 2003; Hackler & Mayer, 2008; Qian, 2013). Therefore, providing such a cultural climate that attracts those creative talents is the key ingredient to promoting place-specific innovation and entrepreneurship activity (Boschma & Fritsch, 2009; Florida, 2005, 2014).

Although, these various approaches often have served as blue print for development agendas across the globe, their evidence is mixed. Criticism is vast, spanning different aspects as well as both conceptual and methodological shortcomings (Donegan, Drucker, Goldstein, Lowe, & Malizia, 2008; Kotkin, 2013; McGranahan & Wojan, 2007; Storper & Scott, 2009; Zheng, 2016).

The first concerns endogeneity issues. Thus, whether tolerant places are rather the cause for the clustering of highly talented people or the consequence is ambiguous. Indeed ample evidence from various disciplines of social science suggests that the level of which communities grant individuality and show tolerance for diversity is linked to both economic development, wages and educational level (Inglehart et al., 2008). In a similar vein, Glaeser, Gyourko, and Saiz (2008) reveal it is not primarily the cultural setting that drives regional growth, but rather the stock of human capital, industrial density and the presence of research institutions and universities that stimulates innovation and entrepreneurship. Glaeser *et al*. (2010) concludes that cities with a large share of high-skilled and high-earning people also tend to have a higher willingness to pay for cultural amenities, which drives local cultural development. Möller and Tubadji (2009) have tested Florida's concept of the creative class using panel data for 323West German regions. According to their findings, the creative class is attracted by favorable economic conditions such as employment growth and wages rather than culture. Flack et al. (2011) and Moeller and Tubadji (2009) propose a strategy that partly overcomes endogeneity issues. By going back in history, the authors claim that the contemporary regional endowment of human capital is the result of cultural heritage. Using German opera houses from the baroque era to measure the cultural legacy of places, their findings reveal that culture affects the concentration of human-capital employees, and these employees promote local knowledge spillovers and shift a location to a higher growth path. However, Bauer et al. (2015) demonstrate

that this strategy is prone to misleading results since cultural legacy and historical cultural goods are highly correlated with other historical events.

Another weakness in the literature concerns the identification of the preferences that are held to motivate the locational choices of highly talented people (Bayer et al., 2009; Clark, 2004; Hansen & Niedomysl, 2009; Pratt, 2008; Storper & Scott, 2009). All of them select observable locational features, e.g. diversity, density, temperature, prices, tolerance, or other cultural amenities, and then assume that these features must match with the preferences of those highly talented and skilled people that provide the source of entrepreneurship. For instance, Pratt (2011) criticizes Florida for deriving his relevant preferences simply on the basis of interviews and suggestive correlations. Storper and Scott (2009) question why tolerance, in particular, or Florida´s suggested operational expression, diversity and open-mindedness acts as a compelling amenity serving as a beacon for those creative talents, when the very same talents "[…] who are claimed to be so motivated by tolerance and diversity […]" (p. 155) today typically share relatively homogenous lifestyles, search for each other and the same neighborhoods. Other studies have found a non-significant relationship among different measures of diversity and high growth, innovation and entrepreneurship outcomes (Basu & Altinay, 2002; N. Lee, 2014). Thus, the most diverse places seem not necessarily to be also the most creative ones. The great melting pots around the world provide anecdotal evidence. Cities such as Frankfurt and Singapore are known for their rich and diverse culture, but not as being centers of creativity. Similarly, some recent studies even warn against possible negative effects of tolerance and diversity, while emphasizing the importance of social cohesion, safe neighborhoods and trust(Berggren & Jordahl, 2006; Hauser, Tappeiner, & Walde, 2007; Portes & Vickstrom, 2015; Qian, 2013; Smallbone, Kitching, & Athayde, 2010).

Empirical approaches used in recent studies that aim to overcome previous research traps by integrating a variety of different amenities in their analysis, have also been criticized

for missing some important aspects. For instance, none of these approaches provide an analytical framework that provides sufficiently justification their selection choices and why these specific amenities should play a role. Accordingly, Storper and Scott (2009) and Zheng (2016) have summarized that the different amenities seem to be randomly selected rather than theoretically developed. Others also criticize the lack of research that deploys structural techniques, such as explorative factor analysis or structural equation models, to identify possible interactions and structural patterns among the different types of amenities (Audretsch & Belitski, 2013; Bauer et al., 2015; Clark, 2004; McGranahan et al., 2010; Zheng, 2016).

Closely linked to these questions of relevant preferences is another major criticism, which is generally concerned with endogeneity issues (Bauer et al., 2015; Glaeser et al., 2010; Peck, 2005; Rappaport, 2008). Most previous research has only studied the relationship between types of amenities and a high local concentration of highly skilled and creative talents; however, very little research has directly tested the impact of amenities on measures of entrepreneurship activity. However, there is no serious doubt that places exhibiting a high concentration of talented people also tend to exhibit high levels of human-capital, R&D, high technology, and innovations, but whether, in fact, these "smart places" are actually characterized by a high degree of entrepreneurial activity is less evident. Several recent studies provide compelling evidence that these phenomena may not necessarily be geographically co-located. (Caragliu et al., 2011; Hollands, 2008; Shapiro, 2006). For example, Lehmann, Seitz and Wirsching (2017) found that innovative places, as measured by "hard" patentable output, are characterized by a rich industrial and R&D climate. By contrast, startup cities are more likely to feature creative industries and cultural diversity. Thus, it seems to be more a matter of *who* the entrepreneurs actually are and *what* preferences they share. Similarly, the recent criticism by Pratt (2011) and Morgan and Ren (2012) suggests that entrepreneurs constitute a "creative underclass" which demands an inspirational atmosphere that that goes far beyond

social tolerance and open-mindedness. This idea is also reflected by Peck (2005), who has argued that entrepreneurs are more likely to be an exclusive, avant-garde, and of out-of-box-thinkers with preferences that distinguish them from well-educated and creative people. Empirical evidence that preferences systematically differ across distinct subpopulations of talented people is provided by Clark (2004). Analyzing 3,111 US counties for 20 different amenities, Clark's findings indicate that middle-aged highly educated workers appreciate natural and outdoor amenities, whereas young talents are more drawn to constructed "cultural" amenities, such as fine arts, bars and museum. Engineers and high tech workers live in places with both more outdoor spaces and cultural amenities. Similarly, Florida (2013) observed a migration trend where startup scenes move from suburban locations, like Silicon Valley or the Boston´s outskirts along the Route 128, towards more denser and walkable outlets with a vibrant street culture, like downtown San Francisco or Lower Manhattan. In his study of creative clusters in London, Singapore and Vancouver, Hutton (2006) has also found support that many creative workers feel particularly drawn to built environments rather than natural environments. Creative people prefer locations in the city center and former industrial buildings, because they offer a stylish life-style and historical identity.

However, which amenities are associated with the life-styles considerations of creative entrepreneurs, and whether these might explain high local entrepreneurship activity, has not yet been directly analyzed. Several studies claim that it would be of particular interest to see how conventional human capital, for instance highly educated employees, and creative entrepreneurs differ in their preferences towards cultural amenities and what makes places attractive to those type of creative underclass (Heebels & van Aalst, 2010; Kloosterman, 2014; Morgan & Ren, 2012). This study aims to contribute to the extant literature by developing an expanded approach that revolves around the impact of subcultures.

3. SUBCULTURES AND ENTREPRENEURSHIP

Studies on subcultures and their impact on societies have enlivened research in the twentieth century and appear to become even more relevant in the beginning of the twenty-first century (Dhoest, Malliet, Haers, and Segaert, 2015). Subcultures define distinctive groups of society that are bound by alternative perceptions, values and beliefs towards life as the establishment, thus socio-cultural mainstream (Hebdige, 1995; Schouten and McAlexander, 1995). Ever since the initial wave of research, subcultures have been seen as cradles for avant-garde life-styles that subsequently flow into mainstream culture, thus, changing dominant values (Dhoest et al., 2015; Hebdige, 1995; Schouten and McAlexander, 199; McCracken, 1990). For example, the beatnicks of the 1950s, the hippies of the 1960s, the environment movement of late 1970s, punk or club scene of the 1980s, the 1990s grunge or, contemporary hip hop and indie rock, constitute prominent examples of subcultures that have influenced the "Zeitgeist".

Both entrepreneurship research entrepreneurship and innovation policy research have increasingly considered the impact of subcultures over past two decades (Kloosterman, 2014; Morgan & Ren, 2012). It is argued that, like for all other dimensions of social life, even the entrepreneurial spirit has been influenced by a small and pioneering avant-garde subculture consisting of freaks and geeks. For instance, it was a small scene of nerdy masterminds that created Silicon Valley´s legacy as a start-up Eldorado in a garage. Starting from here, it was the legends and images crafted by visionary entrepreneurs such as Steve Jobs, Bill Gates or Larry Ellison that diffused hero-like perception of entrepreneurs across the USA and throughout the rest of the world. These visionary entrepreneurs served as role models for an entire generation of founders during the age of the new economy and still influence the contemporary entrepreneurial scene.

Even when Silicon Valley is still the hub of the start-up world, we observe vibrant start-up scenes across the globe, such as in Austin, Nashville, Tel Aviv, Berlin, Moscow, Copenhagen or Leipzig. These cities are not exclusively built on a high share of human capital or industrial production, but are globally recognized for their vibrant street and subcultural scenes.

Williams (2007) notes that the legacy of all subcultures is in protest and tolerance culture. Similarly, Fischer (1975) has studied the formation of subcultural scenes in urban areas. His findings report that subcultures constitute themselves in a culture of "being different" and "unconventional values" - all vivid in eccentric dress styles, bars and music clubs, and consumption patterns (Hirschle & Kleiner, 2014). Thus, the co-presence of a vibrant subcultural scene might encourage people to think differently and is conducive to experimentalism and creativity inspiring entrepreneurs , (Dhoest, Malliet, Haers, & Segaert, 2015; C. Evans, 1997; Hall & Jefferson, 1993; Hebdige, 1995). This may suggest that subcultural scenes are a better predictor for place-based entrepreneurship than are the previously tested "conventional" traits of popular cultural amenities. Thus, creative entrepreneurs are might choosing music clubs over operas, independent music over philharmonics, and rather street-art and culture than the fine arts and large-scale amenities, like Madame Tussaudes and zoos, as inspirational source and place of exchange and meet with friends (Kloosterman, 2005, 2014).

However, until now, there has been no systematical research exploring the relationship between subcultures, regional development and entrepreneurship activity. This paper aims to fill this research gaps by identifying the impact of different cultural amenities on local entrepreneurship activity. In adhering to the findings of the extant literature this paper posits that talented and entrepreneurial people are especially attached to rich cultural environments, but that the preferences for each group systematically differ. Thus, while smart and human capital, in the sense of skilled and trained people, is attracted to mainstream and popular culture,

such as museums, theater or cinemas (Florida & Gates, 2003; Glaeser, Gyourko, et al., 2008; Glaeser et al., 2010; Landry, 2008); entrepreneurial people may search for other, "subcultural" types of amenities.

These hypotheses have neither been posited nor subjected to empirical scrutiny in the entrepreneurship literature. In the next section we test our hypothesis by examining the impact of different measures of cultural amenities reflecting mainstream versus alternative culture, on local startup rates. Measuring subcultures presents a challenge, since there is no extant literature upon which to draw.. We utilize explorative factor analysis to compare the effect of different measures of subcultural amenities against measures, which have traditionally been used to reflect „mainstream" culture on startup rates. Thus, we are able to provide the first analysis in the entrepreneurship with empirical strategy for measuring subcultures and identifying their different impacts on entrepreneurship.

4. EMPIRICAL ANALYSIS

4.1 Sample & Data

This section subject the hypothesis that entrepreneurs are attracted to locations characterized by a vibrant subcultural life rather than mainstream culture to empirical scrutiny. These entrepreneurs self-select themselves to hip places that fulfill their desires for alternative sense-making, underground lifestyles and open-mindedness. These places then emerge as entrepreneurial hot spots with higher startup rates. Since there is no previous work to build on, capturing whether cities are more mainstream or subcultural presents a challenge. The distinction between cultural amenities that might be targeting more mainstream audiences rather than niches and subcultures is not iron-glad (Kloosterman, 2014). Hence, we propose a multi-dimensional approach spanning various variables from which we believe incorporate either mainstream or niche-oriented cultural patterns. In order to provide a systematical

framework, we utilize factor analysis to even statistical confine measures of mainstream and subculture.

We test our hypothesis by analyzing the 69 large urban districts (independent cities) in Germany. Given the proximity and density of social and physical capital, amenities and necessary infrastructure conditions, scholars have found that large cities tend to be the most relevant socioeconomic and institutional unit of analysis for entrepreneurship-driven growth (Acs et al., 2013; Begg, 1999; Florida et al., 2016; Glaeser et al., 2010; Jacobs, 1970; Kloosterman, 2005; Landry, 2008; Meijers, 2008; Moretti, 2004; Pflüger & Südekum, 2008; Ullman, 1954). We utilize a full and comprehensive dataset of all large cities in Germany provided by the Census of 2011. Ever since the international statistical conference of 1887, large cities are defined as agglomerations with more than 100.000 inhabitants. For our purposes we select all large, that is 69, German cities (For an overview see Table 1).

[Insert Table 1 here]

We hand-collect data from several public data sources and commercial reports to construct the variables. Table 2 and Table 3 summarize all variables and sources.

3.2 Dependent Variables

To measure entrepreneurial activity in cities, we rely on data measuring start-up rates. Start-ups refer to new firms with high growth rates in the ICT sector. By comparison, we also use the number of start-ups listed in 2015 for each city by Gründerszene.de. The online platform www.Gründerszene.de is the leading online and news magazine for entrepreneurs, start-ups and investors providing information about new opportunities and developments, along with daily

news for the digital economy. To measure local start up intensity, we construct a location quotient measuring the geographic concentration of startup activity.

3.3 Independent Variables

Measuring culture has always been a difficult task in empirical research. Over the past decades research has tried to measure culture using different operationalization strategies, including value-based survey data (Beugelsdijk, 2010; Inglehart, 2004), population data and ethnical diversity (Florida & Gates, 2003; N. Lee, 2014; Smallbone et al., 2010), the geographical distribution of personality traits or religious confessions (Adamczyk & Pitt, 2009; Obschonka, Schmitt-Rodermund, Silbereisen, Gosling, & Potter, 2013; Obschonka et al., 2015). Within the entrepreneurship literature, capturing the cultural vibrancy via local cultural amenities has become quite common in recent research (Albouy, 2016; Landry, 2008; Mellander, Florida, & Stolarick, 2011; Zheng, 2016). It is assumed that location-specific characteristics reflect the consumption preferences on individuals (Glaeser & Gottlieb, 2006; Rappaport, 2008; Roback, 1982). Moreover, those locations that successfully attract talent there are able to meet the preferences for overall quality of life and cultural attainment (Clark et al., 2002). Thus, a rich supply of cultural scenes and amenities is not only supposed to be an indicator for a large local stock of talent, but also reflects a certain type of local culture. Previous studies have tried to measure local culture via various dimensions of cultural amenities, e.g. artistic scenes, museums, theaters, bars, cafes and art galleries and cinemas (Bauer et al., 2015; Clark, 2004; Clark et al., 2002; Falck et al., 2011; Kloosterman, 2014; Rappaport, 2008). We also follow this tradition. In order to reduce possible selection bias, we draw on several variables, which we believe best reflects conventional or traditional "mainstream" culture. Considerable empirical work has assumed that theaters and museums not only reflect the unique cultural identity and vibrancy of a particular city, but also are important features for attracting

talent and spurring urban growth (Audretsch, 2015; Bauer et al., 2015; Breznitz & Noonan, 2014; Clark, 2004; Falck et al., 2011; Kloosterman, 2014; Polèse, 2012).

Therefore, we use both the number of museums and the number of local theaters as measures of mainstream cultural vibrancy. However, several studies note that museums and theaters are generally more associated with the fine and high arts (S. Y. Lee et al., 2010). Within this line, several studies suggests that the local supply of cultural amenities, such as museums and theaters, are more likely to be the consequence of then the cause for urban growth (Storper & Scott, 2009): Hence, arts and culture tend to develop after cities attain a higher standard of living enablings purchasing power for consuming cultural attainment (Bauer et al., 2015; Falck et al., 2011; Glaeser & Gottlieb, 2006; Glaeser et al., 2001).Within the same context, other studies provide a compelling argument that the distribution of high arts and culture is historically path-dependent and therefore, more like to be exogenous to the variations of high human capital (Bauer et al., 2015; Falck et al., 2011).

In order to control for possible biases, we thus expand our analysis by including the number of cinemas as an additional factor for measuring mainstream culture. Several studies before have drawn on the number of movie theaters for measuring the attractiveness of a place (Clark et al., 2002; Lloyd & Clark, 2001). We follow this approach and assume that while museums and theaters might reflect more of a high and niche cultural amenity, that might be more likely to be associated highly educated people. By contrast, movies and cinema might be more likely to reflect of mainstream culture, which might be less sensitive towards incomes or historical trajectories.

No previous research has attempted to measure local subcultural vibrancy Thus, in accordance with the procedure used above to measure the cultural mainstream, we follow a multi-dimensional operationalization strategy for measuring subcultural attainment. Subcultures have always been tightly linked to art and music scenes (Bader & Scharenberg,

2010; Hall & Jefferson, 1993; Hebdige, 1995). We select population data for all self-employed artists and freelancer authors and publicists that are locally registered at the German federal health insurance program for artists (Künstlersozialkasse, KSK). The KSK is part of the statutory social security insurance. Since 2007, all self.-employed artist and publicist are required to register with the KSK-database. Measuring local cultural vibrancy through employment data in creative industries, is not new and has been done in numerous studies. For example, Florida´s (2004) renowned work about the "rise of the creative class" has triggered numerous studies using population data of artists to measure the locations´ local spirit of particular locations. However, contrary to those previous approaches, we measure self-employed artists. By taking into account whether they are self-employed or not, we attempt to reduce potential interrelations with variables that might reflect cultural mainstream rather than subcultures, e.g. number of theaters, newspaper etc.

Nevertheless, there still might be a statistical overlap between the number of self-employed artists and freelance publicists. Therefore, we include a measure of the local concentration of independent record labels. Independent labels compensate for market failures since they publish music for small and avant-garde niche markets that are commercially uninteresting for major labels. Usually, when they have proved their potential for the big mainstream audience, music bands switch to larger labels that have the financial power to boost their careers. Thus, the presence of independent music labels may be a suitable measure of avant-garde and vibrant subcultural life.

Veganism has recently emerged as a hot trend among young urban hipsters across the globe (Cherry, 2006). Contrary to the vegetarian diet, the vegan philosophy rejects all kinds of animal products for nutrition, and sometimes even clothing. It is much more radical and extreme than the vegetarian movement, which had once also started as a subcultural, eco-conscious movement back, but now is indubitably mainstream. To test, whether veganism effects startup

activity, we use a measure of the local number of vegan restaurants listed by PETA (People for the Ethical Treatment of Animals), the largest and globally renowned association for protecting animal rights. Finally, we measure the extent of alternative medicine treatments as a new sub-culture trend (Badley & Canizares, 2016). Since the 1980s, health care, beauty and wellness services have enjoyed a great reception in some urban areas, resulting in highly profitable markets. Similarly, alternate methods of treatment, such as ancient Chinese medicine, acupuncture or au natural treatments, enjoy rising popularity (Badley & Canizares, 2016; Barnes, Powell-Griner, McFann, & Nahin, 2004; Tindle, Davis, Phillips, & Eisenberg, 2005). However, in comparison to mainstream medical practices medicine, alternate methods of treatment remain prominent priority health-conscious subgroups. Thus, drawing on data of the number of practices offering naturopathy seems to be reasonable way to measure the presence of alternative milieus.

3.4 Control Variables

There are other important factors influencing entrepreneurial activity in addition to culture. Examples include the role of cluster structures (Lehmann & Menter, 2016; Porter, 1998; Zhang, 2003), human capital and educational attainment (Florida, 2013; Kuratko, 2005; S. Y. Lee et al., 2010) and venture and social capital (Bertoni, Colombo, & Grilli, 2011; Beugelsdijk & Van Schaik, 2005; Obschonka et al., 2015; Samila & Sorenson, 2011). Thus, we control for several common and previously variables that have been found to consistently influence entrepreneurial activity. In his seminal work about the creative class, Florida (2004) argues that entrepreneurship and culture flourish in open-minded, social diverse and tolerant local networks that spur creativity and knowledge. These networks usually occur in places with a high share of creative people (Florida, 1995). Correspondingly, we use occupational data from employees working in creative industries, such as media, publication and design to control for the influence of the creative class on startup rates. Further, we consider urban density and levels of social

diversity as possible influences on entrepreneurial activity (Knudsen et al., 2008; Rappaport, 2008). A vast stream of research on social capital emphasizes the crucial role played by heterogeneous, weak and open social ties for regional entrepreneurship (Hauser et al., 2007; Letki, 2008; Portes & Vickstrom, 2015; Westlund & Adam, 2010). In accordance with previous studies, we use data about immigrants as a measure of social diversity in cities (Hackler & Mayer, 2008; Qian, 2013).

Research also has identified the importance of knowledge and human capital for entrepreneurship. Entrepreneurs search for both "thick" labor markets with highly-qualified workers and on the demand-side, customers with high incomes (Isenberg, 2011; Mack & Mayer, 2015; Möller & Tubadji, 2009). Thus, in order to control for the effect of human capital, we use data on the share of employees that have obtained at least a tertiary level of education, according to International Standard Classification of Education (ISCED). We also control for the standard of living in the city by including per capita income.

R&D intensity has also been directly linked to entrepreneurship through knowledge spillovers (Acs et al., 2013; Audretsch & Feldman, 2004; Leydesdorff & Etzkowitz, 1996). We use the share of employees working in R&D to measure the potential for knowledge spillover entrepreneurship.

[Insert Table 2 here]

[Insert Table 3 here]

3.5 Methodology

To analyze our data set we rely on a cross-city comparison with time-lagged effects. Because of Germany´s special political history, we have to consider possible biases due to the former socialist regions and cities of Eastern Germany. Our complete sample of the 69 largest

urban districts (>100,000 inhabitants) comprise nine ex-socialist cities (Dresden, Erfurt, Halle/Saale, Jena, Leipzig, Magdeburg, Potsdam, Rostock, Chemnitz); however, the results show no evidence that having a socialist heritage makes a significant difference in the average startup rates. This is inconsistent with recent findings suggesting that socio-cultural heritages persist over a long period of time and even endures institutional shocks, e.g. socialism the broke down of Soviet Union (Fritsch & Wyrwich, 2012); but nevertheless it appears to be reasonable in the context of our small but full data set.

Tables 2 and 3 summarize all sampled variables. Most variables correlate very slightly to moderate ($0.009 \leq r \geq 0.5$). The correlation between the level of income per capita, R&D and social diversity is higher, suggesting additional attention (max $r \leq 0.69$). Testing for multi-collinearity, however, reveals that inconspicuous values of variance inflation factor ($VIF < 10$) along all deployed variables. A critical issue for this paper is to operationalize culture in general but subcultural life in particular. However, previous research within the cultural field of entrepreneurship has identified that the results are sensitive towards both measures and operationalization (Thomas & Mueller, 2000; Torjman & Worren, 2010). We therefore rely on a multi-dimensional approach summarizing various proxies for which we believe either characterize mainstream or subcultural vibrancy. These variables include the number of museums, theaters and movie theaters for mainstream cultural amenities; and freelance artists and publicists, the number of independent music labels, vegan restaurants and health-conscious alternative medical practitioner as potential proxy for local subcultures. First, we run factor analysis to explore covariance and structural patterns between all independent variables. Besides principal component analysis, explorative factor analysis is a commonly used technique for summarizing a set of variables (Kim & Mueller, 1978; Thompson, 2004). In this case, we test whether our independent variables can be used either as measures of cultural or

subculture attainment. We subsequently estimate regressions with the resulting factor loadings as regressors along our core models:

(1)

$$Startups_{it} = \beta_0 + \beta_1\ Subculture_{it-1} + \beta_2 CreativeClass + \beta_3 HC_{it-1} + + \beta_4 Income_{it} + \beta_5 R\&D_{it} + \beta_6 Density_{it-1} + \beta_7 Diversity_{it} + \varepsilon_{it}$$

The first equation (Model 1) enables a test of our main hypothesis. Accordingly, the presence of subcultural scene explains high rates of start-up activity.

(2)

$$Startups_{it} = \beta_0 + \beta_1\ Culture_{it-1} + + \beta_2 CreativeClass + \beta_3 HC_{it-1} + + \beta_4 Income_{it} + \beta_5 R\&D_{it} + \beta_6 Density_{it-1} + \beta_7 Diversity_{it} + \varepsilon_{it}$$

In a next step, we contrast this thesis by estimating the impact of "traditional" culture on entrepreneurship rates. (Model: 2). In order to consider whether there might be a complementary effect of culture and subculture on entrepreneurship, we estimate model 3:

(3)

$$Startups_{it} = \beta_0 + \beta_1\ Subculture_{it} + \beta_2 Culture_{it} + + \beta_3 CreativeClass + \beta_4 HC_{it-1} + + \beta_5 Income_{it} + \beta_6 R\&D_{it} + \beta_7 Density_{it-1} + \beta_8 Diversity_{it} + \varepsilon_{it}$$

Recent studies on "entrepreneurship ecosystems" reveal particular elements conducive to entrepreneurship. In particular, it is the interplay of factors, rather than their just their existence that is important (Malecki, 2011; Stam, 2015). To test this hypothesis, we estimate model 4 with an interaction between both factor variables.

(4)

$$Startups_{it} = \beta_0 + \beta_1\ Subculture_{it} + \beta_2 Culture_{it} + \beta_3\ Subculture_{it-1} * Culture_{it} + \beta_4 CreativeClass + \beta_5 HC_{it-1} + + \beta_6 Income_{it} + \beta_7 R\&D_{it} + \beta_8 Density_{it-1} + \beta_9 Diversity_{it} + \varepsilon_{it}$$

3.6 Results

Table 4 reports the results of our factor analysis. First, we investigated what is the optimal number of factors summarizing our suggested measures of cultural attainment versus subcultural life. Considering only factors that the minimum equals an eigenvalue over one, table 4 suggests best loading variables onto two factors (for factor 1 eigenvalue= 2.03; factor 2 eigenvalue=1.04; table 4); the very slight difference between the eigenvalue of factor 1 and factor 2 while the large spread between factor 2 and the factor 3, further supports weighting our variable only onto two factor loadings.

[Insert Table 4 here]

Table 4 also suggests how the variables weight for each factor and displays the correlation between each variables and factors. The number of museums, theaters and movie theaters ought to capture mainstream culture, while indie music labels, self-employed artists and freelance publicists, vegan restaurants and the local supply of alternative medical treatments should be a proxy for subcultures rather than mainstream culture. Thus, we rotate factor loadings in order to test whether measures are consistent with our distinction. Factor loadings for the varimax orthogonal rotation show strong correlations between record labels and artists with factor 1 that might reflect subcultural vibrancy. Nevertheless, alternative medical treatment has no significant correspondence when limiting observations to a correlation coefficient minimum equal r=0.3. Surprisingly, vegan restaurants correspond to factor 2 (r=0.55), suggesting they belong to the cultural mainstream rather than subcultures. This might not be as surprising as it looks at the sight. Originally started as a consumer-conscious counter-movement (Cherry, 2006, 2015), veganism has garnered considerable resonance and recently evolved to the mainstream stage. Today, vegan meals are available in almost every café,

canteens and super markets or even on the menus of legacy airlines. A recent survey by YouGov and the Institute for Opinion Polls Allensbach (2015) reveals that more than ten percent of the Germans now live a vegetarian lifestyle and almost two percent are vegans (YouGov & Allensbach, 2014).

Alternatively, we deploy promax oblique factor loading rotation to control for the results. In contrast to varimax orthogonal rotation, promax uses oblique rotation loadings that allow factors to be correlated to better approximate structures and improve the interpretability of factors. Correlations using promax have similar factor loadings except for the number of theaters; these are yet neither loaded to factor 1 nor factor 2. Therewith, promax factor solution comes close to our idea of subculture vs. traditional culture. Thus, for the following regression analysis, we deploy factor loadings correspondingly to the results provided by promax oblique rotation, i.e. factor 1 for subculture attainment and factor 2 for mainstream culture.

[Insert Table 5 here]

Table 5 reports the results of our regression analyses. The first model supports our main hypothesis. The factor variable associated with subcultural attainment shows a positive and highly significant impact on startup rates. This relationship is robust and remains statistically significant when controlling for all other influences. Model 2 tests our alternative hypothesis: The basic linear model finds a significant link between cultural attainment and ICT entrepreneurship. However, this effect is for a very poor model fit (pseudo R-squared of 0.015) and turns insignificant when including all control variables. Model 3 contrasts both factor variables and supports our main hypothesis more strongly. Thus, when including both variables, subculture has a significant impact on startups rates, indicating that a strong subcultural scene drives ICT entrepreneurship but mainstream cultural attainment does not.

We also controlled for the joint impact of culture and subculture. The results suggest that even after controlling for a possible interaction between both factors, subculture remains significantly related to startups rates while the influence of culture remains negligible. More interestingly, by including the interaction term the coefficient of the mainstream culture variable changes sign from positive to negative. However, this effect is not statistically significant. All findings of models 3 and model 4 remain robust when including all controls.

Small sample sizes are generally sensitive to extremes. Nevertheless, most of our regression results continue to be robust when controlling for possible outliers. Audretsch and Lehmann (2016) describe how Berlin attracts thousands of would-be entrepreneurs, not only from other parts of Germany but also from the UK and the US. In our sample Berlin reports a number of startups that is three times higher (n=545) than the second most entrepreneurial city in Germany, Munich, which has 165 ICT startups. However, even when dropping Berlin out of our regression analysis, the findings of Model 1, Model 3 and Model 4 remain robust and display the same levels of significance and signs. Due to low levels of model fit (pseudo R-squared < 0.02), the basic Model 2 is sensitive towards outliers. Thus, by dropping Berlin, the factor variable for traditional culture shows no significant impact on startup rates.

4. DISCUSSION

The results of our analysis strongly confirm our hypothesis that subcultural vibrancy is a prerequisite for more robust startup activity. This effect appears to be consistent across all models and controls. Our findings also reveal that "traditional" cultural amenities, such as measures of museums etc., are only related to entrepreneurship rates when excluding the role of subcultures and all control variables. This points to a severe limitation in previous research (Bauer et al., 2015; Falck et al., 2011; Rappaport, 2008; Zheng, 2016): It seems that startup hotspots co-evolute with subcultures rather than mainstream and cultural amenities in general.

Subsequent research might suggest that subcultural amenities together with indie music and artistic scene serve as a vital source of inspiration and creativity spillovers while providing laboratories for entrepreneurs and their ideas. Therefore, we confirm the results from previous studies finding that vivid creative scenes play an important role in creating a "local buzz" of place-based innovation and entrepreneurship (Asheim & Gertler, 2005; Jacobs, 1970; Polèse, 2012). A vast body of research confirms that density in general as well as the concentration of skilled and well-educated human capital in particular, is conducive to local entrepreneurship (Dakhli & De Clercq, 2004; Meijers, 2008; Saxenian, 1996; Storper & Scott, 2009) . Our results support that human capital and urban density are related to high startup activity. Nevertheless, we find no evidence that high levels of local R&D are conducive to high local startup activity. Although this seems contradictory to previous research at first glance (Acs, Braunerhjelm, Audretsch, & Carlsson, 2009), it is barely surprising because our dependent variable measures the rate of startups affiliated with the ICT sector, and R&D efforts are usually associated with high-tech innovations and "hard", patentable industrial research. ICT industries however require "softer", i.e. smarter and creative problem-solving rather than does formal research and development (Acs, Audretsch, Lehmann, & Licht, 2016; Lehmann, Seitz, & Wirsching, 2017). An influential stream in the literature has highlighted the particular relationship between human capital, tolerance for diversity, and entrepreneurship-driven growth. In our study, tolerance as reflected by a measure of cultural diversity shows a negative correlation with local startup rates. This is contradictory to previous estimations (Rutten & Gelissen, 2008), but is however consistent with recent studies suggesting a) the tolerance-entrepreneurship is more nuanced in a context of social trust and economic variables, and b) tolerance is not synonymously with cultural diversity (Beugelsdijk & Klasing, 2013; Qian, 2013; Welter, 2012).

Our empirical analysis bears several limitations regarding our sample. We are aware of the challenges emerge with small sample sizes in terms of reliability and interpretation of the

results. Nevertheless, at the same time, our data have a number of unique advantages. First, our measures of subculture are unique and have not, to date, been available for analysis in any country context.. Second, entrepreneurship capacity differs in scale and scope across countries, regions and cities due to national and regional institutions and other socio-cultural constraints (Acs & Szerb, 2007; Autio & Acs, 2007; Carree & Thurik, 2003; Wennekers et al., 2005). Thus, comparing cites within the same country context reduces biases and complexity, and hence improves overall interpretability.

Research on local quality of life and economic development has always been suspected for endogeneity issues (Glaeser, 2005; Rappaport, 2008). Although there has emerged a broad literature suggesting strategies to account for and identify causal linkages (Bauer et al., 2015; Möller & Tubadji, 2009), whether cultural scenes and the attractiveness of a place are rather the consequence than the cause of economic development is still an open question. However, while our study also is unable to solve the chicken-egg problem, it is able to contribute to the literature in several ways. First, we provide evidence for the relationship between local cultures and place-based entrepreneurship activity. Therefore, we confirm the findings of previous studies within the entrepreneurship literature on. Second, we take a step further and compare different types of local cultures on local startup activity. We are able to introduce a model for measuring urban subcultures against mainstream. Third, our findings suggest that not all types of cultures have the same impact on entrepreneurship. Therefore, we partly confirm the findings of previous research highlighting that an inspirational atmosphere of open-mindedness and tolerance is crucial for creating local startup scene, but they are not necessarily found in places with mainstream people and amenities; rather, it is urban subcultural life that effects local entrepreneurship culture. Fourth, the study adds to our knowledge about the entrepreneurial underclasses and their location preferences. Focusing on subculture rather than the creative class is therefore a useful way to overcome the ongoing contradictions regarding empirical

evidence and theorizing about the creative class and the role of culture in entrepreneurship ecosystems.

5. CONCLUSION & IMPLICATIONS

Considerable interest culture has emerged in the regional studies literature, because of its role in attracting the creative class and spurring entrepreneurship. However, the empirical evidence is mixed and fraught with ambiguities and contradictions. This paper has attempted to unravel those ambiguities by drawing on a conceptual literature emphasizing the heterogeneous nature of culture. Rather than being represented as a single measure, the heterogeneity inherent in culture is better served by distinguishing between different types of cultures. In particular, this paper developed new and previously untested hypotheses linking this specific type of sub-culture, as well as the more typical measure of culture, to regional entrepreneurial activity.

The empirical evidence generally provides compelling support for the main hypotheses posited in the paper. Most importantly, it is the sub-culture and not necessarily mainstream culture that is particularly important in generating new-firm startups in the ICT sector. The implications for public policy may be that it does not suffice to focus on culture in a broad sense as an instrument to spur entrepreneurship. While, in fact, culture does matter, the results of this paper suggest that it may be the particular type of culture, or more specifically sub-culture, that is the key ingredient generating entrepreneurial activity. It may not suffice to simply invest in culture generally but rather the particular type of sub-culture that is conducive to entrepreneurship.

While this paper is the first to provide different measures reflecting disparate types of culture to entrepreneurship within a spatial context, probing other dimensions reflecting the heterogeneity inherent in culture could prove fruitful in subsequent research. We would anticipate future research to build on the results presented in this paper by decomposing culture

into key salient components reflecting place-specific idiosyncrasies. In the quest to identify those key elements of an inherently heterogeneous culture that provide a catalyst for entrepreneurship, future research is more likely to identify that those particular types of culture spurring entrepreneurial activity may depend upon characteristics of both the region but also the specific type of entrepreneurship. Still, this paper has made a good start in unravelling the perplexing findings in the extant literature by learning that is may not be culture that matters for entrepreneurship but a particular type, or sub-culture which spurs entrepreneurial activity.

Within the literature of entrepreneurship, creative class and human capital theory has garnered indisputable attention. Nevertheless, evidence is mixed and has resulted in criticism and widespread discussions across academia. This study aimed to review the main critical arguments and develop an expanded approach that revolves around the impact of subcultures. We argued that an inspirational atmosphere of open-mindedness and social tolerance attracts creative talents, but they are not necessarily found in places with a high share of diversity and an abundance of cultural amenities; however, rather it is subcultural life that attracts creative and entrepreneurial minds, thus, subcultures rather than mainstream culture drives local startup activity.

References

Acs, Z. J., Audretsch, D. B., & Lehmann, E. E. (2013). The knowledge spillover theory of entrepreneurship. *Small Business Economics, 41*(4), 757-774.

Acs, Z. J., Audretsch, D. B., Lehmann, E. E., & Licht, G. (2016). National systems of Entrepreneurship. *The Journal of Technology Transfer*, 1-12.

Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economics, 32*(1), 15-30.

Acs, Z. J., Desai, S., & Hessels, J. (2008). Entrepreneurship, economic development and institutions. *Small Business Economics, 31*(3), 219-234.

Acs, Z. J., & Szerb, L. (2007). Entrepreneurship, economic growth and public policy. *Small Business Economics, 28*(2-3), 109-122.

Acs, Z. J., & Varga, A. (2002). Geography, endogenous growth, and innovation. *International Regional Science Review, 25*(1), 132-148.

Adamczyk, A., & Pitt, C. (2009). Shaping attitudes about homosexuality: The role of religion and cultural context. *Social Science Research, 38*(2), 338-351.

Albouy, D. (2016). What are cities worth? Land rents, local productivity, and the total value of amenities. *Review of Economics and Statistics, 98*(3), 477-487.

Asheim, B., & Gertler, M. (Eds.). (2005). *The geography of innovation*. Oxford: Oxford University Press.

Audretsch, D. B. (2015). *Everything in Its Place: Entrepreneurship and the Strategic Management of Cities, Regions, and States*: Oxford University Press.

Audretsch, D. B., & Belitski, M. (2013). The missing pillar: the creativity theory of knowledge spillover entrepreneurship. *Small Business Economics, 41*(4), 819-836.

Audretsch, D. B., & Feldman, M. P. (2004). Knowledge spillovers and the geography of innovation. *Handbook of Regional and Urban Economics, 4*, 2713-2739.

Audretsch, D. B., & Lehmann, E. E. (2016). *The Seven Secrets of Germany: Economic Resilience in an Era of Global Turbulence*. Oxford: Oxford University Press.

Autio, E., & Acs, Z. J. (2007). Individual and country-level determinants of growth aspiration in new ventures. *Frontiers of Entrepreneurship Research, 27*.

Bader, I., & Scharenberg, A. (2010). The sound of Berlin: Subculture and the global music industry. *International Journal of Urban and Regional Research, 34*(1), 76-91.

Badley, E., & Canizares, M. (2016). SAT0579 Trends in Use of Physiotherapists, Chiropractors and Complementary and Alternative Medicine Practitioners for Arthritis over Time and across Generations. *Annals of the Rheumatic Diseases, 75*(Suppl 2), 879-879.

Barnes, P. M., Powell-Griner, E., McFann, K., & Nahin, R. L. (2004). *Complementary and alternative medicine use among adults: United States, 2002.* Paper presented at the Seminars in Integrative Medicine.

Basu, A., & Altinay, E. (2002). The interaction between culture and entrepreneurship in London's immigrant businesses. *International Small Business Journal, 20*(4), 371-393.

Bauer, T. K., Breidenbach, P., & Schmidt, C. M. (2015). “Phantom of the Opera” or “Sex and the City”? Historical amenities as sources of exogenous variation. *Labour Economics, 37*, 93-98.

Bayer, P., Keohane, N., & Timmins, C. (2009). Migration and hedonic valuation: The case of air quality. *Journal of Environmental Economics and Management, 58*(1), 1-14.

Begg, I. (1999). Cities and competitiveness. *Urban Studies, 36*(5-6), 795-809.

Berggren, N., & Jordahl, H. (2006). Free to trust: Economic freedom and social capital. *Kyklos, 59*(2), 141-169.

Berry, C. R., & Glaeser, E. L. (2005). The divergence of human capital levels across cities. *Papers in Regional Science, 84*(3), 407-444.

Bertoni, F., Colombo, M. G., & Grilli, L. (2011). Venture capital financing and the growth of high-tech start-ups: Disentangling treatment from selection effects. *Research Policy, 40*(7), 1028-1043.

Beugelsdijk, S. (2010). Entrepreneurial culture, regional innovativeness and economic growth *Entrepreneurship and Culture* (pp. 129-154). New York: Springer.

Beugelsdijk, S., & Klasing, M. J. (2013). Cultural Diversity. *Available at SSRN: https://ssrn.com/abstract=2336045 or http://dx.doi.org/10.2139/ssrn.2336045*.

Beugelsdijk, S., & Van Schaik, T. (2005). Social capital and growth in European regions: an empirical test. *European Journal of Political Economy, 21*(2), 301-324.

Boschma, R. A., & Fritsch, M. (2009). Creative class and regional growth: Empirical evidence from seven European countries. *Economic Geography, 85*(4), 391-423.

Breznitz, S. M., & Noonan, D. S. (2014). Arts districts, universities, and the rise of digital media. *The Journal of Technology Transfer, 39*(4), 594-615.

Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). Smart cities in Europe. *Journal of Urban Technology, 18*(2), 65-82.

Carree, M. A., & Thurik, A. R. (2003). The impact of entrepreneurship on economic growth *Handbook of Entrepreneurship Research* (pp. 437-471): Springer.

Cherry, E. (2006). Veganism as a cultural movement: A relational approach. *Social Movement Studies, 5*(2), 155-170.

Cherry, E. (2015). I was a teenage vegan: motivation and maintenance of lifestyle movements. *Sociological Inquiry, 85*(1), 55-74.

Clark, T. N. (Ed.). (2004). *Urban amenities: lakes, opera, and juice bars: do they drive development?* : Emerald Group Publishing Limited.

Clark, T. N., Lloyd, R., Wong, K. K., & Jain, P. (2002). Amenities drive urban growth. *Journal of Urban Affairs, 24*(5), 493-515.

Clifton, N., & Cooke, P. (2009). Creative knowledge workers and location in Europe and North America: a comparative review. *Creative Industries Journal, 2*(1), 73.

Comunian, R. (2010). Rethinking the Creative City: The Role of Complexity, Networks and Interactions in the Urban Creative Economy. *Urban Studies, 48*(6), 1157-1179. doi: 10.1177/0042098010370626

Cushing, R., Florida, R., & Gates, G. (2002). When social capital stifles innovation. *Harvard Business Review, 80*(8), 20.

Dakhli, M., & De Clercq, D. (2004). Human capital, social capital, and innovation: a multi-country study. *Entrepreneurship & Regional Development, 16*(2), 107-128.

Davidsson, P. (1995). Culture, structure and regional levels of entrepreneurship. *Entrepreneurship & Regional Development, 7*(1), 41-62.

Dhoest, A., Malliet, S., Haers, J., & Segaert, B. (2015). *The Borders of Subculture: Resistance and the Mainstream*: Routledge.

Donegan, M., Drucker, J., Goldstein, H., Lowe, N., & Malizia, E. (2008). Which indicators explain metropolitan economic performance best? Traditional or creative class. *Journal of the American Planning Association, 74*(2), 180-195.

Evans, C. (1997). Street style, subculture and subversion. *Costume, 31*(1), 105-110.

Evans, G. (2009). Creative cities, creative spaces and urban policy. *Urban Studies, 46*(5-6), 1003-1040.

Falck, O., Fritsch, M., & Heblich, S. (2011). The phantom of the opera: Cultural amenities, human capital, and regional economic growth. *Labour Economics, 18*(6), 755-766.

Florida, R. (1995). Toward the learning region. *Futures, 27*(5), 527-536.

Florida, R. (2002). *The rise of the creative class and how it's transforming work, leisure, community and everyday life (Paperback Ed.)*: New York: Basic Books.

Florida, R. (2003). Entrepreneurship, creativity, and regional economic growth. In *The Emergence of Entrepreneurship Policy*, 39-58.

Florida, R. (2005). *Cities and the creative class*. London: Routledge.

Florida, R. (2013). The learning region. *Regional Innovation, Knowledge and Global Change*, 231-244.

Florida, R. (2014). The creative class and economic development. *Economic Development Quarterly, 28*(3), 196-205.

Florida, R., & Gates, G. (2003). Technology and tolerance: The importance of diversity to high-technology growth. *Research in Urban Policy, 9*(1), 199-219.

Florida, R., Mellander, C., & Stolarick, K. (2008). Inside the black box of regional development—human capital, the creative class and tolerance. *Journal of Economic Geography, 8*(5), 615-649.

Florida, R., Mellander, C., & Stolarick, K. (2016). Human capital in cities and suburbs. *The Annals of Regional Science*, 1-33.

Fritsch, M., & Wyrwich, M. (2012). The long persistence of regional entrepreneurship culture: Germany 1925-2005. *DIW Berlin Discussion Paper No. 1224. Available at SSRN:http://ssrn.com/abstract=2111984*.

Glaeser, E. L. (2005). Edward L. Glaeser, Review of Richard Florida's The Rise of the Creative Class. *Regional science and urban economics*, *35*(5), 593-596.

Glaeser, E. L., & Gottlieb, J. D. (2006). Urban resurgence and the consumer city. *Urban Studies, 43*(8), 1275-1299.

Glaeser, E. L., Gyourko, J., & Saiz, A. (2008). Housing supply and housing bubbles. *Journal of Urban Economics, 64*(2), 198-217.

Glaeser, E. L., Kahn, M. E., & Rappaport, J. (2008). Why do the poor live in cities? The role of public transportation. *Journal of Urban Economics, 63*(1), 1-24.

Glaeser, E. L., Kolko, J., & Saiz, A. (2001). Consumer city. *Journal of Economic Geography, 1*(1), 27-50.

Glaeser, E. L., Resseger, M., & Tobio, K. (2009). Inequality in cities. *Journal of Regional Science, 49*(4), 617-646.

Glaeser, E. L., Rosenthal, S. S., & Strange, W. C. (2010). Urban economics and entrepreneurship. *Journal of Urban Economics, 67*(1), 1-14.

Hackler, D., & Mayer, H. (2008). Diversity, entrepreneurship, and the urban environment. *Journal of Urban Affairs, 30*(3), 273-307.

Hall, S., & Jefferson, T. (1993). *Resistance through rituals: Youth subcultures in post-war Britain*. London: Psychology Press.

Hansen, H. K., & Niedomysl, T. (2009). Migration of the creative class: evidence from Sweden. *Journal of Economic Geography, 9*(2), 191-206.

Hauser, C., Tappeiner, G., & Walde, J. (2007). The learning region: the impact of social capital and weak ties on innovation. *Regional Studies, 41*(1), 75-88.

Hebdige, D. (1995). Subculture: The meaning of style. *Critical Quarterly, 37*(2), 120-124.

Heebels, B., & van Aalst, I. (2010). Creative clusters in Berlin: Entrepreneurship and the quality of place in Prenzlauer Berg and Kreuzberg. *Geografiska Annaler: Series B, Human Geography, 92*(4), 347-363.

Hirschle, J., & Kleiner, T.-M. (2014). Regional cultures attracting interregional migrants. *Urban studies, 51*(16), 3348-3364.

Hollands, R. G. (2008). Will the real smart city please stand up? Intelligent, progressive or entrepreneurial? *City, 12*(3), 303-320.

Hopp, C., & Stephan, U. (2012). The influence of socio-cultural environments on the performance of nascent entrepreneurs: Community culture, motivation, self-efficacy and start-up success. *Entrepreneurship & Regional Development, 24*(9-10), 917-945.

Huggins, R., & Thompson, P. (2014). Culture, entrepreneurship and uneven development: a spatial analysis. *Entrepreneurship & Regional Development, 26*(9-10), 726-752.

Hutton, T. A. (2006). Spatiality, built form, and creative industry development in the inner city. *Environment and Planning, 38*(10), 1819-1841.

Inglehart, R. (2004). *Human beliefs and values: A cross-cultural sourcebook based on the 1999-2002 values surveys*: Siglo XXI.

Inglehart, R., Foa, R., Peterson, C., & Welzel, C. (2008). Development, freedom, and rising happiness: A global perspective (1981–2007). *Perspectives on Psychological Science, 3*(4), 264-285.

Isenberg, D. J. (2011). The entrepreneurship ecosystem strategy as a new paradigm for economic policy: Principles for cultivating entrepreneurship. *Presentación ante el Instituto de Asuntos Internacionales u Europeos*.

Jacobs, J. (1970). *The economy of cities*. New York: Random House.

Kim, J.-O., & Mueller, C. W. (1978). *Factor analysis: Statistical methods and practical issues* (Vol. 14). London: Sage.

Kloosterman, R. C. (2005). Come together: An introduction to music and the city. *Built Environment, 31*(3), 181-191.

Kloosterman, R. C. (2014). Cultural Amenities: Large and Small, Mainstream and Niche—A Conceptual Framework for Cultural Planning in an Age of Austerity. *European Planning Studies, 22*(12), 2510-2525.

Knudsen, B., Florida, R., Stolarick, K., & Gates, G. (2008). Density and Creativity in U.S. Regions. *Annals of the Association of American Geographers, 98*(2), 461-478.

Kotkin, J. (2013). Richard Florida concedes the limits of the creative class. *The Daily Beast*.

Kuratko, D. F. (2005). The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship Theory and Practice, 29*(5), 577-598.

Landry, C. (2008). *The Creative City: A Toolkit for Urban Innovators*. Sterling: Dunstan House.

Lee, N. (2014). Migrant and ethnic diversity, cities and innovation: Firm effects or city effects? *Journal of Economic Geography*. doi: 10.1093/jeg/lbu032

Lee, S. Y., Florida, R., & Gates, G. (2010). Innovation, human capital, and creativity. *International Review of Public Administration, 14*(3), 13-24.

Lehmann, E. E. (Ed.). (2015). *The role of universities in local and regional competitiveness*. Oxford: Oxford University Press.

Lehmann, E. E., & Menter, M. (2016). University-Industry Collaboration and Regional Wealth. *Journal of Technology Transfer, 41*(6), 1284-1307.

Lehmann, E. E., & Seitz, N. (2017). Creativtiy and Entrepreneurship: Culture, Subcultures and the impact on new venture creation. State-of-the-Art and some descriptive statistics and data. In M. Wagner, J. W. Pasola & T. Burger-Helmchen (Eds.), *Global Management of Creativity* (pp. 97-120). London: Routhledge.

Lehmann, E. E., Seitz, N., & Wirsching, K. (2017). Smart finance for smart places to foster new venture creation. *Economia e Politica Industriale, 44*(1), 51-75.

Letki, N. (2008). Does diversity erode social cohesion? Social capital and race in British neighbourhoods. *Political Studies, 56*(1), 99-126.

Leydesdorff, L., & Etzkowitz, H. (1996). Emergence of a Triple Helix of university—industry—government relations. *Science and public policy, 23*(5), 279-286.

Lloyd, R., & Clark, T. N. (2001). The city as an entertainment machine. *Critical Perspectives on Urban Redevelopment, 6*(3), 357-378.

Mack, E., & Mayer, H. (2015). The evolutionary dynamics of entrepreneurial ecosystems. *Urban Studies, 53*(10), 2118-2133.

Malecki, E. J. (2011). Connecting local entrepreneurial ecosystems to global innovation networks: open innovation, double networks and knowledge integration. *International Journal of Entrepreneurship and Innovation Management, 14*(1), 36-59.

McGranahan, D. A., & Wojan, T. (2007). Recasting the creative class to examine growth processes in rural and urban counties. *Regional Studies, 41*(2), 197-216.

McGranahan, D. A., Wojan, T. R., & Lambert, D. M. (2010). The rural growth trifecta: outdoor amenities, creative class and entrepreneurial context. *Journal of Economic Geography, 11*(3), 529-557.

Meijers, E. (2008). Summing small cities does not make a large city: polycentric urban regions and the provision of cultural, leisure and sports amenities. *Urban Studies, 45*(11), 2323-2342.

Mellander, C., Florida, R., & Stolarick, K. (2011). Here to stay—the effects of community satisfaction on the decision to stay. *Spatial Economic Analysis, 6*(1), 5-24.

Möller, J., & Tubadji, A. (2009). The Creative Class, Bohemians and Local Labor Market Performance: A Micro-data Panel Study for Germany 1975—2004. *Jahrbücher für Nationalökonomie und Statistik*, 270-291.

Moretti, E. (2004). Human capital externalities in cities. In G. Duranton, J. V. Henderson & W. C. Strange (Eds.), *Handbook of Regional and Urban Economics* (Vol. 5, pp. 2243-2291).

Morgan, G., & Ren, X. (2012). The Creative Underclass: Culture, Subculture, and Urban Renewal. *Journal of Urban Affairs, 34*(2), 127-130.

Obschonka, M., Schmitt-Rodermund, E., Silbereisen, R. K., Gosling, S. D., & Potter, J. (2013). The regional distribution and correlates of an entrepreneurship-prone personality profile in the United States, Germany, and the United Kingdom: A socioecological perspective. *Journal of Personality and Social Psychology, 105*(1), 104.

Obschonka, M., Stuetzer, M., Gosling, S. D., Rentfrow, P. J., Lamb, M. E., Potter, J., & Audretsch, D. B. (2015). Entrepreneurial Regions: do macro-psychological Cultural Characteristics of Regions help solve the "Knowledge Paradox" of Economics? *PloS one, 10*(6), e0129332.

Park, R. E., Burgess, E. W., & McKenzie, R. D. (1925/1984). *The city*. Chicago: University of Chicago Press.

Peck, J. (2005). Struggling with the creative class. *International Journal Of Urban And Regional Research, 29*(4), 740-770.

Pflüger, M., & Südekum, J. (2008). A synthesis of footloose-entrepreneur new economic geography models: when is agglomeration smooth and easily reversible? *Journal of Economic Geography, 8*(1), 39-54.

Polèse, M. (2012). The arts and local economic development: Can a strong arts presence uplift local economies? A study of 135 Canadian cities. *Urban Studies, 49*(8), 1811-1835.

Porter, M. E. (1998). *Clusters and the new economics of competition* (Vol. 76): Harvard Business Review Boston.

Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly, 14*(1), 15-34.

Portes, A., & Vickstrom, E. (2015). Diversity, social capital, and cohesion. *Migration: Economic Change, Social Challenge*, 461-479.

Pratt, A. C. (2008). Creative cities: the cultural industries and the creative class. *Geografiska Annaler: Series B, Human Geography, 90*(2), 107-117.

Pratt, A. C. (2011). The cultural contradictions of the creative city. *City, Culture and Society, 2*(3), 123-130.

Qian, H. (2013). Diversity versus tolerance: The social drivers of innovation and entrepreneurship in US cities. *Urban Studies, 50*(13), 2718-2735.

Rappaport, J. (2008). Consumption amenities and city population density. *Regional Science and Urban Economics, 38*(6), 533-552.

Rauch, A., Frese, M., Wang, Z.-M., Unger, J., Lozada, M., Kupcha, V., & Spirina, T. (2013). National culture and cultural orientations of owners affecting the innovation–growth relationship in five countries. *Entrepreneurship & Regional Development, 25*(9-10), 732-755.

Roback, J. (1982). Wages, rents, and the quality of life. *The Journal of Political Economy*, 1257-1278.

Rosenthal, S. S., & Strange, W. C. (2008). The attenuation of human capital spillovers. *Journal of Urban Economics, 64*(2), 373-389.

Rutten, R., & Gelissen, J. (2008). Technology, talent, diversity and the wealth of European regions. *European Planning Studies, 16*(7), 985-1006.

Samila, S., & Sorenson, O. (2011). Venture capital, entrepreneurship, and economic growth. *The Review of Economics and Statistics, 93*(1), 338-349.

Saxenian, A. (1996). Beyond boundaries: Open labor markets and learning in Silicon Valley. *The boundaryless career: A new employment principle for a new organizational era*, 23-39.

Scott, A. J. (1999). The cultural economy: geography and the creative field. *Media, Culture & Society, 21*(6), 807-817.

Scott, A. J. (2006a). Creative cities: conceptual issues and policy questions. *Journal of Urban Affairs, 28*(1), 1-17.

Scott, A. J. (2006b). Entrepreneurship, innovation and industrial development: geography and the creative field revisited. *Small Business Economics, 26*(1), 1-24.

Shapiro, J. M. (2006). Smart cities: quality of life, productivity, and the growth effects of human capital. *The Review of Economics and Statistics, 88*(2), 324-335.

Smallbone, D., Kitching, J., & Athayde, R. (2010). Ethnic diversity, entrepreneurship and competitiveness in a global city. *International Small Business Journal, 28*(2), 174-190.

Stam, E. (2015). Entrepreneurial ecosystems and regional policy: a sympathetic critique. *European Planning Studies, 23*(9), 1759-1769.

Storper, M., & Scott, A. J. (2009). Rethinking human capital, creativity and urban growth. *Journal of Economic Geography, 9*(2), 147-167.

Thiel, J. (2015). Creative cities and the reflexivity of the urban creative economy. *European Urban and Regional Studies, 24*(1), 21-34. doi: 10.1177/0969776415595105

Thomas, A. S., & Mueller, S. L. (2000). A case for comparative entrepreneurship: Assessing the relevance of culture. *Journal of International Business Studies*, 287-301.

Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding Concepts and Applications*: American Psychological Association.

Tindle, H. A., Davis, R. B., Phillips, R. S., & Eisenberg, D. M. (2005). Trends in use of complementary and alternative medicine by US adults: 1997-2002. *Alternative Therapies in Health and Medicine, 11*(1), 42.

Torjman, L., & Worren, J. (2010). Culture of Entrepreneurship. *The Open Source Business Resource*, 4.

Ullman, E. L. (1954). Amenities as a factor in regional growth. *Geographical Review*, 119-132.

Welter, F. (2012). All you need is trust? A critical review of the trust and entrepreneurship literature. *International Small Business Journal*, 0266242612439588.

Wennekers, S., Van Wennekers, A., Thurik, R., & Reynolds, P. (2005). Nascent entrepreneurship and the level of economic development. *Small Business Economics, 24*(3), 293-309.

Westlund, H., & Adam, F. (2010). Social capital and economic performance: A meta-analysis of 65 studies. *European Planning Studies, 18*(6), 893-919.

Williams, J. P. (2007). Youth-Subcultural Studies: Sociological Traditions and Core Concepts. *Sociology Compass, 1*(2), 572-593.

YouGov, & Allensbach, I. f. O. P. (2014). Wer will‘s schon vegan – Aktuelle Ernährungsvorlieben und Lieblingsmarken in Deutschland 2014 – Typ für Typ“. Cologne: Institute for Opinion Polls Allensbach.

Zhang, J. (2003). Growing Silicon Valley on a landscape: an agent-based approach to high-tech industrial clusters. *Journal of Evolutionary Economics, 13*(5), 529-548.

Zheng, L. (2016). What city amenities matter in attracting smart people? *Papers in Regional Science, 95*(2), 309-327.

Appendix *(Article IV)*

Table 1 City list

ID	City	Population (2011)	Region	East/West Germany
1	Aachen, Stadt	238,665	Northrhine-Westphalia	West Germany
2	Augsburg, Stadt	269,402	Bavaria	West Germany
3	Berlin, Stadt	3,326,002	Berlin	West Germany
4	Bielefeld, Stadt	327,199	Northrhine-Westphalia	West Germany
5	Bochum, Stadt	362,585	Northrhine-Westphalia	West Germany
6	Bonn, Stadt	307,530	Northrhine-Westphalia	West Germany
7	Bottrop, Stadt	117,074	Northrhine-Westphalia	West Germany
8	Braunschweig, Stadt	243,829	Lower Saxonia	West Germany
9	Bremen, Stadt	544,043	Bremen	West Germany
10	Bremerhaven, Stadt	108,139	Bremen	West Germany
11	Chemnitz, Stadt	240,543	Saxony	East Germany
12	Darmstadt, Wissenschaftsstadt	145,845	Hesse	West Germany
13	Dortmund, Stadt	571,403	Northrhine-Westphalia	West Germany
14	Dresden, Stadt	517,765	Saxony	East Germany
15	Duisburg, Stadt	487,470	Northrhine-Westphalia	West Germany
16	Düsseldorf, Stadt	589,649	Northrhine-Westphalia	West Germany
17	Erfurt, Stadt	201,952	Thuringia	East Germany
18	Erlangen, Stadt	104,312	Bavaria	West Germany
19	Essen, Stadt	565,900	Northrhine-Westphalia	West Germany
20	Frankfurt am Main, Stadt	676,533	Hesse	West Germany
21	Freiburg im Breisgau, Stadt	214,234	Baden-Württemberg	West Germany
22	Fürth, Wissenschaftsstadt	116,640	Bavaria	West Germany
23	Gelsenkirchen, Stadt	257,994	Northrhine-Westphalia	West Germany
24	Hagen, Stadt	187,333	Northrhine-Westphalia	West Germany
25	Halle (Saale), Stadt	230,494	Saxony-Anhalt	East Germany
26	Hamburg, Freie und Hansestadt	1,718,187	Hamburg	West Germany
27	Hamm, Stadt	176,474	Northrhine-Westphalia	West Germany
28	Hannover, Landeshauptstadt	509,485	Lower Saxonia	West Germany
29	Heidelberg, Stadt	148,415	Baden-Württemberg	West Germany
30	Heilbronn, Stadt	116,716	Baden-Württemberg	West Germany
31	Herne, Stadt	154,887	Northrhine-Westphalia	West Germany
32	Ingolstadt	126,076	Bavaria	West Germany
33	Jena, Stadt	106,428	Thuringia	East Germany
34	Karlsruhe, Stadt	291,995	Baden-Württemberg	West Germany
35	Kassel, documenta-Stadt	191,854	Hesse	West Germany
36	Kiel, Landeshauptstadt	237,667	Schleswig Holstein	West Germany
37	Koblenz, Stadt	107,954	Rhineland Palatinate	West Germany

38	Krefeld, Stadt	221,864	Northrhine-Westphalia	West Germany
39	Köln, Stadt	1,013,665	Northrhine-Westphalia	West Germany
40	Leipzig, Stadt	510,043	Saxony	East Germany
41	Leverkusen, Stadt	159,373	Northrhine-Westphalia	West Germany
42	Ludwigshafen am Rhein, Stadt	158,637	Rhineland Palatinate	West Germany
43	Lübeck, Hansestadt	210,679	Schleswig Holstein	West Germany
44	Magdeburg, Landeshauptstadt	228,910	Saxony-Anhalt	East Germany
45	Mainz, Stadt	201,002	Rhineland Palatinate	West Germany
46	Mannheim, Universitätsstadt	291,458	Baden-Württemberg	West Germany
47	Mönchengladbach, Stadt	254,834	Northrhine-Westphalia	West Germany
48	Mülheim an der Ruhr, Stadt	166,804	Northrhine-Westphalia	West Germany
49	München, Landeshauptstadt	1,364,920	Bavaria	West Germany
50	Münster, Stadt	293,393	Northrhine-Westphalia	West Germany
51	Nürnberg, Stadt	490,085	Bavaria	West Germany
52	Oberhausen, Stadt	210,256	Northrhine-Westphalia	West Germany
53	Offenbach am Main, Stadt	114,855	Hesse	West Germany
54	Oldenburg (Oldenburg), Stadt	157,706	Lower Saxonia	West Germany
55	Osnabrück, Stadt	154,513	Lower Saxonia	West Germany
56	Pforzheim, Stadt	115,211	Baden-Württemberg	West Germany
57	Potsdam, Stadt	157,603	Brandenburg	East Germany
58	Regensburg	136,352	Bavaria	West Germany
59	Remscheid, Stadt	110,132	Northrhine-Westphalia	West Germany
60	Rostock, Hansestadt	201,813	Mecklenburg Western Pomerania	East Germany
61	Saarbrücken, Landeshauptstadt	176,497	Saarland	West Germany
62	Solingen, Stadt	155,080	Northrhine-Westphalia	West Germany
63	Stuttgart, Landeshauptstadt	591,015	Baden-Württemberg	West Germany
64	Trier, Stadt	106,284	Rhineland Palatinate	West Germany
65	Ulm, Universitätsstadt	117,541	Baden-Württemberg	West Germany
66	Wiesbaden, Landeshauptstadt	270,952	Hesse	West Germany
67	Wolfsburg, Stadt	120,889	Lower Saxonia	West Germany
68	Wuppertal, Stadt	342,570	Northrhine-Westphalia	West Germany
69	Würzburg, Stadt	124,449	Bavaria	West Germany

Table 2 Data Summary

Variable	Obs	Mean	Std. Dev.	Min	Max	Description	Source
Startups	69	1	3.791	0	29.424	Number of ICT startups (Location quotient))	Gründerszene.de; January 2015
Theaters	69	.947	.524	0	2.39	Number of theaters per 1000 inhabitant	Urban audit; Eurostat; 2012
Museums	69	4.821	3.038	.56	18.26	Number of museums per 1000 inhabitant	Urban audit; Eurostat; 2012
Cinema	69	14.643	5.685	.63	28.09	Number of seats in movie theaters per 1000 inhabitant	Filmförderanstalt FFA; 2011
Independent music labels	69	.0182	.0185	0	.083	Number of independent record labels	Verband Unabhängiger Musikunternehmen; (VUT); January 2014
Self-employed artists	69	2.883	2.0813	.470	10.562	Number of self-employed artists and publicists	Künstlersozialkasse (KSK); April 2013
Vegan restaurants	69	.0138	.0116	0	.047	Number of vegan restaurants listed by PETA	PETA; January 2014
Alternative medicine	69	.342	.136	.073	.697	Number of practices for alternative medical treatment	Verband deutscher Heilpraktiker; March 2014
Creative Class	69	8.142	1.265	5.717	11.789	Share of employees in media, arts, gaming and publication	Statistische Bundesamt; Regionaldatenbank; 2012
Human Capital	69	2.604	.420	1.774	3.456	Share of employees with min 3-level education (log)	Urban audit, Eurostat; 2012
Income	69	3047.01	385.768	2357.7	3972	Income per capita	Urban audit; Eurostat 2010
R&D intensity	69	13.478	14.398	1.1	62.8	Share of employees in R&D	Statistische Bundesamt; Regionaldatenbank; 2011
Urban density	69	1727.9	727.742	592.419	4392.48	Inhabitant per surface (sqm)	Statistisches Bundesamt; Zensus 2011
Diversity	69	13.089	5.258	3.6	26.8	Share of immigrant (2011)s	Urban audit; Eurostat; Zensus 2011

Table 3 Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Startups	1.0000													
2 Theaters	0.1233	1.0000												
3 Museums	-0.0668	0.3609	1.0000											
4 Cinema	-0.0704	0.2899	0.3351	1.0000										
5 Independent music labels	0.5535	0.2196	-0.1180	-0.0714	1.0000									
6 Self-employed artists	0.5995	0.4213	0.0924	0.0351	0.7559	1.0000								
7 Vegan restaurants	0.0383	0.4062	0.3672	0.3104	0.2025	0.3533	1.0000							
8 Alternative medicine	0.0641	0.2438	0.0885	0.2107	0.1575	0.3760	0.1828	1.0000						
9 Creative Class	0.2023	0.3153	0.1786	0.2349	0.2343	0.3604	0.3220	0.3418	1.0000					
10 Human Capital	0.1549	0.5507	0.4303	0.4256	0.2342	0.4961	0.6966	0.3087	0.5654	1.0000				
11 Income	0.0776	0.0741	-0.0231	-0.0436	0.2510	0.2260	0.0837	0.5208	0.4200	0.1803	1.0000			
12 R&D intensity	0.0091	0.1070	0.1249	0.1286	0.0375	0.0309	0.0819	0.2863	0.3450	0.2667	0.6617	1.0000		
13 Urban density	0.5010	0.1268	-0.3653	-0.2399	0.4554	0.4611	-0.0554	0.1866	0.2509	0.0283	0.3305	0.0173	1.0000	
14 Diversity	0.1218	0.0595	-0.2460	-0.2078	0.3553	0.2321	0.0265	0.4144	0.2271	-0.0585	0.6910	0.3517	0.4993	1.0000

Table 4 Factor analysis: components & factor loadings

No. Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	2.03	0.99	0.76	0.76
Factor 2	1.04	0.91	0.39	1.15
Factor 3	0.13	0.18	0.05	1.20
Factor 4	-0.05	0.06	-0.02	1.18
Factor 5	-0.11	0.04	-0.04	1.14
Factor 6	-0.15	0.07	-0.06	1.08
Factor 7	-0.23	-	-0.08	1.00

Factor loadings				Factor loading - Varimax (r>0.3)			Factor loading- Promax (r>0.3)		
Variable	Factor1	Factor2	Uniqueness	Factor1	Factor2	Uniqueness	Factor1	Factor2	Uniqueness
Theater	0.59	0.26	0.59	0.33	0.55	0.59	--	0.55	0.59
Museums	0.31	0.51	0.64	--	0.60	0.64	--	0.63	0.64
Cinema	0.28	0.46	0.71	--	0.53	0.71	--	0.56	0.71
Independent music label	0.62	-0.54	0.32	0.82	--	0.32	0.85	--	0.32
Self-employed artists	0.82	-0.34	0.21	0.87	--	0.21	0.85	--	0.21
Vegan restaurants	0.54	0.29	0.63	--	0.55	0.63	--	0.54	0.63
Alternative treatment	0.40	0.05	0.83	--	--	0.83	--	--	0.83

Summary						Correlation	
Variable	Obs	Mean	Std. Dev.	Min	Max	Factor culture	Factor subculture
Factor culture	69	0.00	0.83	-1.66	1.73	1	
Factor subculture	69	0.00	0.91	-1.12	3.21	0.3691	1

Table 5 Regression results

	Startups ICT							
	Model 1		Model 2		Model 3		Model 4	
Factor subculture	1.284***	0.655***			1.286***	0.721***	1.269***	0.723***
	(-13.35)	(-2.88)			(-7.36)	(-4.49)	(-8.6)	-4.77
Creative class		0.618**		0.807***		0.567***		0.572***
		-2.41		-3.43		-2.75		(-2.59)
Human Capital		0.756**		1.386*		1.882**		1.884**
		(-2.00)		(-1.87)		(-2.16)		(-2.13)
Income		0.000		0.001		0.000		0.000
		(-1.44)		(-1.25)		(-1.2)		(-1.1)
R&D intensity		-0.055**		-0.090***		-0.054***		-0.054***
		(-2.46)		(-4.78)		(-2.70)		(-2.69)
Urban density		0.001***		0.002***		0.001***		0.001***
		(-3.65)		(-9.06)		(-4.26)		(-4.9)
Diversity		-0.105***		-0.222**		-0.106**		-0.107**
		(-2.64)		(-2.25)		(-2.57)		(-2.47)
Factor culture			0.334**	-0.0306	0.0639	-0.643	-0.254	-0.661
			(-2.26)	(-0.10)	(-0.19)	(-1.33)	(-0.99)	(-1.20)
Factor subculture*culture							0.36	0.0375
							(-1.19)	(-0.15)
Constant	-1.180***	-5.695***	-0.0374	-10.57***	-1.197***	-7.848***	-1.261***	-7.878***
	(-5.09)	(-3.31)	(-0.30)	(-3.34)	(-3.09)	(-2.76)	(-3.81)	(-2.68)
Observations	69	69	69	69	69	69	69	69
Pseudo R-squared	0.606	0.725	0.015	0.683	0.607	0.731	0.616	0.731

* t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01
regressions with robust standard errors

VI. Conclusion and outlook

Today, innovation and entrepreneurship policy programs are highly-prioritized issues on almost every economic development agenda across the globe. Nevertheless, what fosters a country's capacity for exploiting new ideas via innovation and entrepreneurship is still less understood. In recent years, scholars and policy leaders have shown considerable interest in the particular role of cultures and social norms. Especially a cultural atmosphere for tolerance and social freedom is seen as crucial since it attracts entrepreneurial talents and stimulates experimentalism, creativity spillovers and innovation (Cushing, Florida, & Gates, 2002; Florida & Gates, 2003; Storper & Scott, 2009). However, evidence is mixed and fraught with ambiguities. It is the purpose of this thesis to unravel some of these ambiguities and shed light on several aspects previous research has only poorly developed.

Starting with a comprehensive review of the literature, the first article of this thesis offers an introduction and critical summary of current state of affairs. Whereas it seems to be quite clear that notions of individuality, freedom and tolerance are key characteristics of an innovation and entrepreneurship-ready environment, we know relatively little about what these cultures look like or how they exactly influence innovation. What are the key characteristics? Or, what other factors play a role in shaping these cultures? To fill these glaring gaps in the literature, this thesis then presents three empirical studies, each deploying a unique dataset (articles II, III, IV).

Altogether, our results strongly confirm that personal freedom - as a measure of tolerance and diversity - is crucial to stimulate creative entrepreneurship and innovation across all spatial levels of analysis. On a national level, we test whether the slope of the freedom-innovation relationship is a positive, negative or invert U-shape relationship, trading off the costs and benefits. The second article supports an overall positive relationship between freedom and national innovativeness, but there seems to be a threshold effect. Thus, a minimum level of

social freedom is essential to first boost diversity and creativity spillovers. Nevertheless, at a certain point the costs of rising freedom, such as increasing diversity and weak social ties, exceed its benefits.

The third article confirms that a tolerant culture has a positive impact on national innovation performance; however, the strengths of the effect seem to be more nuanced in the context of legal institutions and the level of economic development and social trust. Our results show that trust and a strong rule of law positively moderate the tolerance-innovation link as it seems to leverage the merits of tolerance, such as diversity and open weak structures. However, we also show that the stage of an economy's development matters. Whereas less-developed countries strongly benefit from increasing levels of tolerance, this is not the case for developed economies where being above a certain level of tolerance does not significantly add to higher innovation outcomes. Thus, there seems to be a saturation effect.

At the regional level, we shed light on the underlying factors that make places tolerant and attractive to a scene of creative entrepreneurs. Thereby, the third empirical study included in this thesis has developed a new and complementary perspective that revolves around the role of subcultures. Comparing different measures of local cultures and their amenities, we find support for our hypothesis that a certain cultural spirit of creativity and open-mindedness is needed for clustering a creative startup scene. However, this spirit is not found in mainstream places with high shares of social diversity and cultural amenities; instead entrepreneurship and innovation is fostered in a vibrant subcultural scene.

Overall, the findings of this thesis contribute to the increasingly relevant field of social and cultural studies in economic literature in several ways. Our results provide compelling empirical evidence that culture, specifically a culture of freedom and tolerance, matters to economic growth as it facilitates diversity and knowledge spillovers and attracts human capital and entrepreneurial minds to cluster together. This thesis also contributes to our understanding

about how norms and social values are affected by the socio-economic and institutional environment. We find support that the degree to which societies grant personal freedom and tolerate diversity and individuality depends on how protected and secure people feel. Thereby, our results add to recent research within political and social science that between freedom, social trust and other factors of social development (e.g. educational level and income levels), there might be a causal interplay (Berggren & Elinder, 2012; Berggren & Nilsson, 2014; Qian, 2013). However, the challenge for future research is to identify further variables and causal mechanisms to foster policies that develop growth strategies that leverage the benefits of diversity and tolerance against its social costs. Therefore, our research also contributes to the recently reinvigorated political debates about the limits of tolerance and diversity. Moreover, we hope that our findings may also provide a useful lens through which to interpret the most recent elections in UK and the United States.

By analyzing the role of subcultures, we add a new perspective to the geography of innovation and entrepreneurial ecosystems. We provide empirical evidence for different measures reflecting disparate types of culture. Therefore, our research offers key insights into the factors shaping creative and smart places. In addition, our study aims to extend our knowledge about entrepreneurial underclasses, their preferences and location choices. The implications for public policy may be crude but simple: it does not suffice to invest in traditional cultural amenities, such as operas, museums etc. Instead, politics should create sound urban "playgrounds" where subcultures can experiment and breed. Nevertheless, identifying the features that make such playgrounds, and whether these characteristics even depend upon a specific type of entrepreneurship should be investigated by future research.

In conclusion, this thesis contributes to recent advances in the field of innovation and entrepreneurship policy research, whereas regional and national innovativeness is shaped by social structures and cultural influences. Therefore, we review the main critical arguments and

shed light on various meanings of culture for stimulating innovation-driven development. Altogether, we found support that freedom and a cultural climate of tolerance for individuality is important to promote economic activity. Therefore, we hope our results offer some guidance for policy leaders and urban planners to use in formulating sound innovation and growth strategies.