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Section ARTICLES

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Entrepreneurship and Regional Economic Development: Some reflections

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ABSTRACT: This paper is a reflection of the author's views on recent research developments at the interface of entrepreneurship and regional economic development and growth. The paper begins with an overview of the recent rise of interest in entrepreneurship in general and, in particular, with respect to its influence on regional economic growth and development. Following an introduction the formation and development of high growth firms (HGFs) and their disproportionately large contribution to job creation are examined. Entrepreneurship ecosystems are then examined in an effort to understand the factors that contribute to high levels of HGF production and job growth. This analysis raises a question about the role of culture, governance and institutions in the collage of factors that influence the development of entrepreneurship systems. These factors are then comparatively examined using three case studies for the U.S., Europe and China which raise the question of how to manage the role of government policy to promote entrepreneurship while, at the same time, preserving other seemingly contradictory factors such as risk taking and self-reliance. The last part of the paper focuses on equity considerations that have served as rationales for government intervention in regional and national entrepreneurship systems. Gender, age, migrants, family, technology groups are examined briefly in an effort to provide deeper insight into how public policies in these areas are rationalized. At the end of each major part of the paper relevant research questions are described and discussed. A summary of the paper is presented at the end.

JEL Classification: L26; R11; R58; O12.

Keywords: Economic development; Economic growth; Entrepreneurship ecosystems; Family entrepreneurship; GEDI/REDI; Gender; Governance; High growth firms; Innovation; Institutions; Regions and seniors; Technology and youth entrepreneurship.

RESUMEN: El artículo es una reflexión con los puntos de vista del autor sobre los recientes desarrollos en las relaciones entre emprendedurismo y desarrollo regional y crecimiento. Se inicia con una visión general del reciente aumento del interés en el emprendedurismo, en general, y con respecto a su influencia en el

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crecimiento y el desarrollo económico regional, en particular. A partir de una introducción a la formación y desarrollo de las empresas de alto crecimiento (HGFs/EAC) se examina su desproporcionadamente amplia contribución (más del 50%) a la creación de empleos. Los ecosistemas de emprendedores se analizan a continuación, con un esfuerzo orientado a conocer los factores que contribuyen a los altos niveles de producción y de empleo de las empresas de alto crecimiento (HGF/EAC). Este análisis plantea una pregunta sobre el papel de la cultura, la gobernanza y las instituciones en el conjunto de factores que influyen en el desarrollo de los sistemas de emprendedores. Estos factores se analizan comparativamente utilizando tres casos de estudio referidos a Estados Unidos, Europa y China, los cuales plantean el problema de cómo gestionar el papel de la política del gobierno para promover el emprendedurismo, a la vez que se respeten al mismo tiempo otros factores aparentemente contradictorios, como la asunción de riesgos y la autoconfianza. La última parte del artículo se centra en las consideraciones de equidad que han servido como guía para las intervenciones de las autoridades en los sistemas de emprendedurismo regional y nacional. Se examinan brevemente cuestiones como el género, la edad, los inmigrantes, la familia, los grupos tecnológicos, en un esfuerzo orientado a proporcionar una visión más profunda sobre cómo se racionalizan y justifican las políticas públicas en dichas áreas. Al final de cada parte más importante del artículo se plantean algunas preguntas de investigación que son relevantes y que se describen y discuten. El artículo se cierra con un resumen final.

Clasificación JEL: L26; R11; R58; O12.

Palabras clave: Desarrollo económico; Crecimiento económico; Ecosistema de emprendedores; Familia; Emprendedurismo; GED/REDI; Género; Gobernanza; Empresas de alto crecimiento; Innovación; Instituciones; Regiones y seniors; Tecnología y jóvenes emprendedores.

Part I: Introduction

Great interest in entrepreneurship and its contribution to economic development has unfolded over the last two decades. This interest stems from several sources not the least of which has been from knowledge that rests on the shoulders of others such as Adam Smith (1776), Joseph Schumpeter (1983) and Israel Kirzner (1973) to mention a few. More recently an enormous growth of information and knowledge driven by developments in the information technology and communications industries have not only contributed to this growth but also to the ability to manage and use it when applied to manufacturing and services production. This in turn has created many new products and services that could not have been imagined even a few years ago. The huge growth of knowledge has also created expanded opportunities for innovation and entrepreneurship and related growth at a seemingly ever increasing rate.

In such a rich knowledge environment it should come as no surprise that interest in promoting company formation and growth in many countries has grown considerably since the beginning of the new millennium. Likewise, the increase in entrepre-

neurship degree programs and centers in universities grew from 20 or so in the early 1990s to more than 300 by 2016 (Princeton Review, 2016). With this large and growing interest in entrepreneurship and its perception as a driver of economic growth, the aim of this paper is to examine the state of thinking about entrepreneurship and its role in regional economic development and to consider emerging and future research directions. At the same time along with the growth in the interest in entrepreneurship there has been a huge production of scholarly work. Given the size of this body of work the topics covered in this paper are selective. Further, the topics considered are high on the authors list and thus reflect his thoughts and not necessarily those of other scholars in the field. To the extent that I may have failed to recognize other important topics and issues I beg forgiveness.

At the outset it is important to consider some definitions. Entrepreneurship is often defined as the process of starting and growing a business making entrepreneurs those who start and grow businesses. More recently various forms of entrepreneurship have been recognized that add to this definition. For example, much interest has focused on social entrepreneurship which is viewed as starting and growing a new organization for goals other than making a profit (Shockley *et al.,* 2008). Likewise, others have considered the public sector ripe for a more entrepreneurial approach with a growing literature entertaining the concept of public sector and policy entrepreneurship (Stough and Haynes, 2009). Further, there are other areas of functional specialization that are emerging including: Youth; older and retired persons; female; minority/ethnic; family; health; technology; emerging, developing and developed nation states; and regional entrepreneurship. Some of these are described and examined, in brief, along with related recent research in Part III of the paper.

A more theoretical view partitions traditional entrepreneurship into three parts: productive, unproductive and destructive following Baumol (1989). Productive entrepreneurship equates with the creation and growth of high growth firms (HGFs). Such firms, when successful, rapidly produce jobs and contribute to the critical current policy focus on job creation. Contrarily, non-productive firms are those that are created more for life style or supplemental income; but, not for rapid growth, large scale job creation or for innovation. For example, "mom and pop" groceries or convenience stores and the farmer that mans a vegetable stand are, in the Baumol typology, non-productive in that they produce few jobs or have other minimal economic outcomes. Another way to think about the Baumol distinction is in terms of intentionality: productive entrepreneurship equates with goals of high growth while non-productive is motived to supplement one's income or enabling a specific life style. Destructive entrepreneurship refers to the exploitation of economic opportunities by taking advantage of potentially monopolistic markets created, for example, in war zones, immediate post war settings, and/or by monopolizing markets as gangs or mafia do. The focus here will be mostly on productive entrepreneurship.

These definitions still leave the issue of how entrepreneurship creates sustained economic growth. In the history of economic thought two schools offer an explanation of what causes economic growth. The Adam Smith view (1776) is that economic growth comes from innovation that leads to increases in the division of labor which

in turn propels increasing returns. Schumpeter's thinking on entrepreneurship starts from Smith's conception of its role in economic growth. Kirzner (1973), who views entrepreneurship as the process that recognizes and acts upon a previously unrecognized opportunity, provides an engine that propels Smith's theory of economic growth (Holcombe, 1998). In contrast to Smith's view, Ricardo (1821) sees growth being produced by the factors of production, a view that undergirds the production function approach to growth. Ricardo's theory has enjoyed considerable attention from economists partly, as Holcombe (1998) notes, from the application of the production function approach using regression modeling, e.g., Solow (1956); and Tinbergen (1956). A problem with this approach is that ultimately growth is seen as primarily a function of capital. But this fails to provide an explanation for increasing returns and thus economic growth according to critics (Holcombe, 1998). For this paper the Smith conception of what causes growth is adopted. Admittedly this brief explanation of the Smith and Ricardian theories of economic growth are superficial but because these perspectives critically underlie the discussion they needed to be introduced. The interested reader is referred to Holcombe's (1998) paper that provides a detailed description, analysis and critique of the theories provided by Smith and Ricardo.

The general focus in this paper is on entrepreneurship in regional economic growth and development. Regional economic development is viewed as the sum total of the means of production and its management much as viewed from the perspective of endogenous growth theory (Romer, 1994 and Lucas, 1988) and Stough (1998) at the regional level. As such it includes the regionally based physical or hard infrastructure and the institutional fabric or functionality of the soft infrastructure or institutions (Williamson, 2000) such as informal practices, governance, political and social organizations and culture. An important focus in this context, including formal and informal institutions, is the machinery that a region has to regulate and guide its relationship with higher levels of government such as states or provinces, nations or multi-national regions. Consequently it includes communication, transport and trade, water supply and waste water systems, natural resources, work force size and quality, government policy, regulations and operations, culture, and governance.

The remainder of the paper is presented in three parts following this Introduction (Part I). Part II is an examination of entrepreneurship in regional economic development and the measurement of entrepreneurial ecosystems. The role of governance and institutions in entrepreneurship driven economic development are also considered in Part III. In Part IV, the nature and recent contributions to functional areas of entrepreneurship are examined. And in Part V the results from Parts I and IV are summarized and discussed along with directions for future research.

Part II: Entrepreneurship in Regional Economic Development and Growth

Entrepreneurship, defined as creation and growth of new establishments or firms has been increasing throughout the world since the early 1990s (Acs and Szerb, 2010).

In the U.S. this increase was from about 560,000 in 1994 to 720,000 in 2006 and after that it experienced 4 years of decrease to 560,000 in 2010 and again grew to 680,000 by 2015 (U.S. Department of Labor, 2016). However, from 1994 jobs decreased from about 4.1 million to 2.5 million in 2010 but then increased to 3.0 million. In short, while new establishments grew overall during the period 1994-2015 the job creation of those establishments declined (U.S. Department of Labor, 2016). Thus, entrepreneurship in the U.S. has not been performing particularly well in terms of job creation.

This and similar experience in other countries including members of the EU, recognizing that high growth firms (HGFs) account for a very small percentage of new enterprises (3-6 percent) but more than 50 percent of new jobs have increasingly focused on growth oriented enterprise policies (Mason and Brown, 2014), i.e. the growth of HGFs. Thus, policy, at least in the OECD countries and the EU, has recently focused on promoting high growth firms because their growth is viewed as a major force driving and enhancing productivity, creating new employment, increasing innovation and promoting business internationalization (Brown *et al.,* 2014). Moreover, the number of HGFs was relatively constant before, during and after the 2008 global economic recession and generated more than half of all news jobs which strongly suggests that HGFs are significant producers of jobs in both economic growth and recession periods (NESTA, 2011), i.e. they tend to be recession proof. These observers are increasingly recognizing that the HGFs are critical in overall enterprise development. This conclusion has been responsible for a shift away from traditional enterprise development policies such as, generating more entrepreneurs, grants, tax and other business incentives, subsidies, financial assistance, intellectual property and patents, and generally top-down implementation of policy as these have had limited economic development effectiveness (Mason and Brown, 2014, p. 4). The shift has been to a focus on specific types of entrepreneurs such as HGFs, networks of entrepreneurs and related clustering, advisory assistance in place of across the board financial assistance, innovation development and management systems, and with adoption of policies increasingly implemented at the regional or local levels (Mason and Brown, 2014, p. 4). Policy makers are recognizing that HGFs evolve more effectively in supportive environments that include a core of large and sustained businesses, entrepreneurial recycling, information rich context, culture, availability of start-up and growth capital, presence of universities and service providers (Mason and Brown, p. 4). These supportive environments have come to be called entrepreneurship ecosystems (Global Economic Forum, 2012).

This is not the first time the ecosystem concept has been adopted to help define economic systems. One of the first references to this was by Georgesque-Rogen (1971) with subsequent work by Daly (1991) and Daly and Farley (2004) which established the field of ecological economics. Ecological economics views economics as composed of interdependent human and natural variables that co-evolve over time and geography space. Here the ecological metaphor works quite well in that it assumes a set of inputs and outputs including feedbacks across human and natural contexts that define a complex system. It is not surprising then that this metaphor has been adopted to conceptualize the factors that support entrepreneurship in general and HGF entrepreneurship in particular.

Much thinking has gone into the development of ecosystems for entrepreneurship by academics, government and the development community including non-profits. The approaches are diverse and include such measured dimensions as sectoral focus, geographic and time scales, and dimensional specificity and other attributes related to inputs and outputs to the entrepreneurial process. The Aspen Network of Development Entrepreneurs (ANDE, 2013) discusses and assesses a sampling of nine of these: The Babson Entrepreneurship Ecosystem Project (Babson College); Asset Mapping Project (Council on Competitiveness); Global Entrepreneurship and Development Index (GEDI) (George Mason University); Innovation Rainforest Blueprint (Hwang, V. H.); Six + Six (Koltai and Company), Information and Communication Technology Entrepreneurship (GSM Association); Entrepreneurship Measurement Framework; Doing Business (World Bank); and, Entrepreneurship Ecosystem (World Economic Forum). The GEDI and its regional version REDI are examined below because this model it has been and can be applied at both the national and regional levels while most of the others have less inclusive applications.

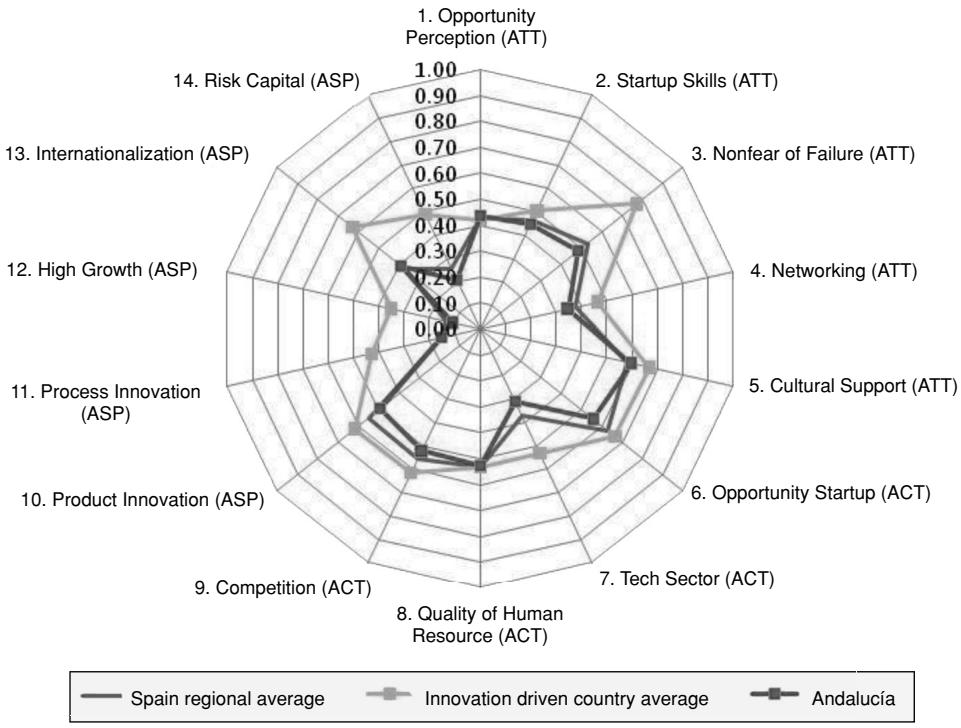
The GEDI is illustrated in Figures 1-3 which show the 14 dimensions of this Index applied to several of Spain's autonomous regions, Andalucia, Madrid and Extremadura, and Spain along with average dimension scores for a group of more innovative countries. The GEDI and REDI organize the dimensions of the index around 3 frameworks: Attitudes (ATT), Action (ACT) and Aspiration (ASP) as designated in Figure 1. Attitude dimensions include Opportunity Perception, Startup Skills, Non-fear of Failure, Networking and Cultural Support; Action dimensions include: Opportunity Startup, Tech Sector, Quality of Human Resources, and Competition. The Aspiration dimensions are: Product Innovation, Process Innovation, High Growth, Internationalization and Risk Capital. Each of the dimension index scores is measured by a combination of several variables that are syntheses of the correlate into a dimensional rating score.

The GEDI and REDI applications, serve as a basis for policy development and evaluation, and guidance. For example in Figure 1 both Spain (GEDI) and Andalucia (REDI) score nearly the same on all dimensions; and, both are likewise weak on the same dimensions compared to the innovative country group. More specifically, Andalucia and Spain have relatively low scores on non-fear of failure (attitude) and process innovation, high growth, internationalization and risk capital (aspiration). These specific areas of weakness indicate where policy can to be directed by both Andalucia and Spain to improve their ecosystems and, further, that coordination between the two will likely lead to stronger outcomes for both. Aspiration scores for Spain and Andalucia are almost the same as for the innovative countries suggesting that these areas or parts of the ecosystem provoke less concern. This example also shows how this index identifies multi-level policy considerations and the potential for policy coordination between Andalucia and Spain as well as also pointing to the opportunity to coordinate with international agencies, e.g., OECD, EU, World Bank, etc.

The GEDI and its regional level application, REDI, illustrate the type of efforts that are being made to measure national and regional entrepreneurial ecosystems in ways that inform and enable policy development, evaluation and management.

There are of course problems with the GEDI and REDI as well as other attempts to measure ecosystems. These include scalability to different geographic units of analysis, level of correlation of variables used to measure the conceptual dimensions, weighting of variables when combined to measure ecosystem dimensions, replicability of measures for various time periods that would enable a dynamic comparison of performance and policy evaluation, supporting evidence for the hypothesized positive relationship between ecosystem scores and entrepreneurship performance, i.e., job creation, other forms of economic growth such as income and wealth creation, and innovative outcomes. Further, as with all ecological systems there are potential problems of logic called the ecological fallacy (Robinson 1950) defined as inferring attributes of the whole to individual members. This potential problem is mitigated in part given the GEDI can and has been applied to sub-regions not just countries of which they are a part. Conceptual thinking and experience suggests that the ecosystem approach can be followed in an effort to measure entrepreneurship and its relation to development. However, more research is needed to better understand the nature of entrepreneurship ecosystems as complex systems and their relationship to entrepreneurship and economic growth at the regional level.

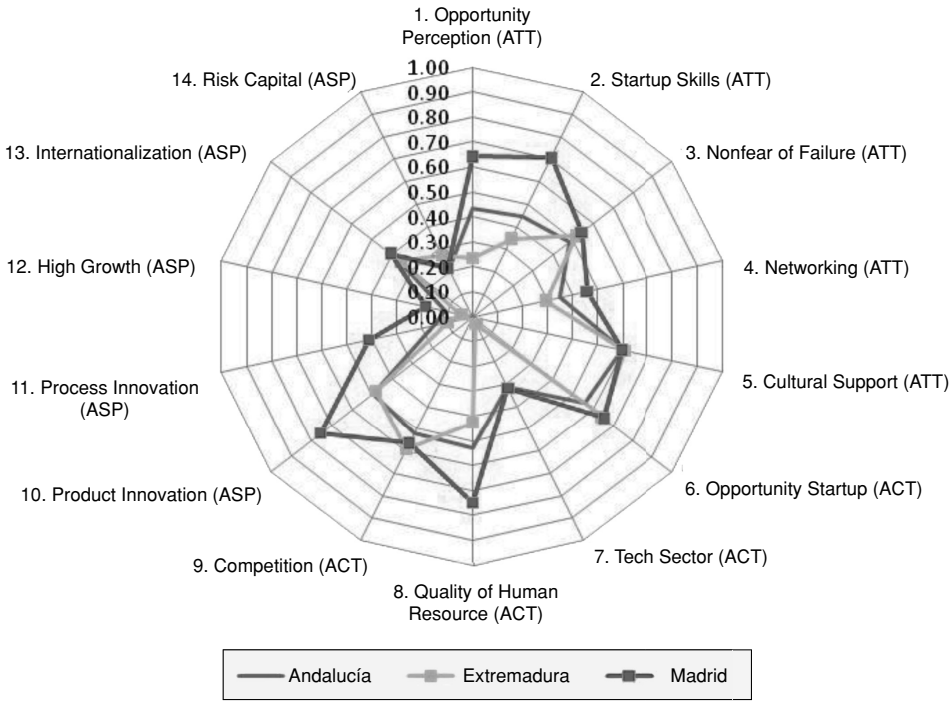
Figure 1. The GEDI Applied to Spain, Andalucia and Innovative Country Averages



Source: Acs *et al.,* 2012, p. 37.

Figure 2 shows the data for the Madrid urbanized region compared to the Spain and Innovation driven countries ecosystem scores. Madrid is the top performer in Spain and also performs well compared to the innovation countries. It shows exceptional strength in opportunity perception and start up skills in the attitude category but also outperforms Spain and the innovative countries group on all measures except risk capital, but in that case the gap is only slightly less than the others. Catalonia often viewed as the center of business and entrepreneurial acumen in Spain has a similar profile to Madrid. At the other extreme in Spain is Extremadura.

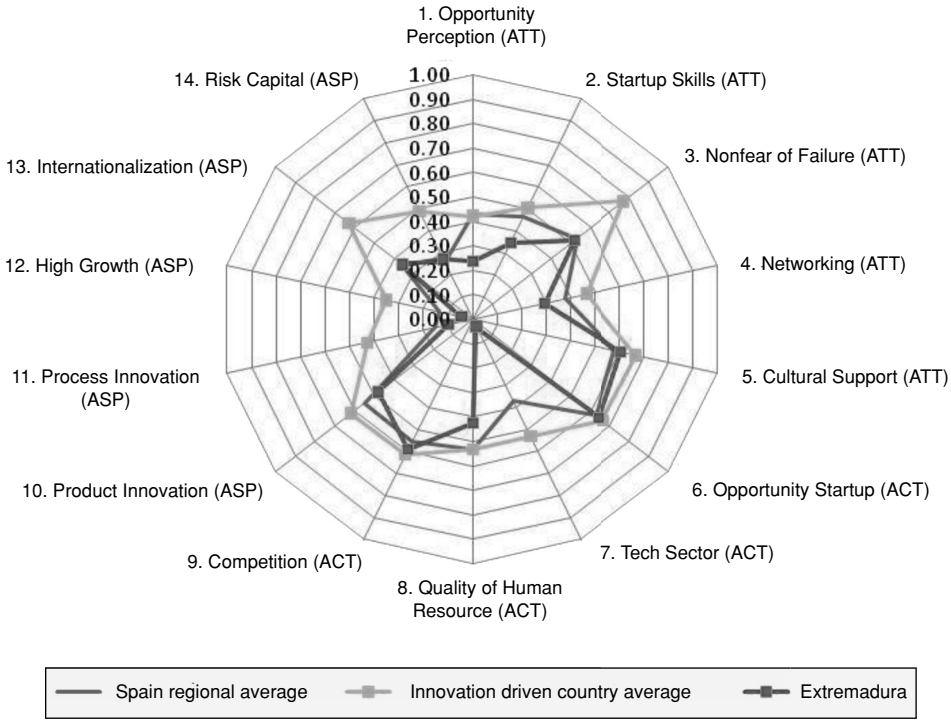
Figure 2. The REDI Applied to Spain, Madrid and Innovative Country Averages



Source: Acs *et al.,* 2012, p. 36.

Figure 3 shows the data for the Extremadura region compared to Spain and the group of innovative countries, and it underperforms both of the referents in almost all aspects. It does perform about on par in the areas of cultural support (attitude), opportunity startup (action) and competition (aspiration). However, the data shows that it needs improvement in almost all other areas including and in particular: opportunity perception, start up skills, technology sector, and quality of human resources, process innovation, high growth aspiration, international and risk capital. Extremadura is not likely to be able to enhance entrepreneurship performance without a solid general economic development plan that is well integrated with action at the Spain and EU levels. Particular attention in such a plan appears to be needed in the perception of opportuni-

Figure 3. The REDI Applied to Spain, Extermadura and Innovative Country Averages



Source: Acs *et al.,* 2012, p. 38.

ties, startup skills, process and product innovation (or just innovation), and improved aspiration to high economic growth, a more international and trade oriented perspective, and risk capital. Particular emphasis should be placed in improving the quality of human capital. This is of course a superficial interpretation of the data on this region as conditions there suggest a systemic pattern of poor economic performance. An integrated economic development and entrepreneurship plan would appear to be required.

It is important to recognize that examples provide only working hypothesis type guidance for policy development and policy making. Local context specific knowledge is also critical. Most applications of the GEDI and REDI include sets of focus group meetings to "ground truth" the quantitative findings and to explore potential applications with local representatives and officials.

The cultural support dimension of the GEDI/REDI is of considerable interest in that it provides the basis for a country or region's institutional framework and, in particular, its governance and institutional model. I use the term institution here in keeping with the institutional economics definition of the term (Williamson, 2000): informal and formal rules that inform and guide behavior. For example, an institution that contributes teaches in any culture is called education or in the view of institu-

tional economics includes the rules that define education and the education process in a specific culture. In this context schools are mere organizations.

The next part of the paper examines the role of governance and related institutions in entrepreneurship using examples from the U.S., Europe and China. These cases provide insight into some of the problems that arise when trying to use common or broadly similar variables for the cultural support metric of an entrepreneurship ecosystem not the least of which is the possibility of committing the ecological fallacy as noted above.

Part III: Governance and Institutions in Entrepreneurship

Governance and institutions are two key factors, which of course are interrelated, that help define a county or region's culture. While the GEDI and REDI both include measures of cultural support for entrepreneurship, applying those measures across cultures may not adequately measure this aspect. That is because different cultures have different ways of identifying and developing not only economic development but more importantly, for this discussion, how they provide support or not. Governance and institutional concepts are now compared among the U.S., Europe and China to illustrate some of the related issues and thus why it is an area that begs for more research. The following discussions are by necessity somewhat superficial and tree top in nature. These are also very short given the space constraints of this paper and the fact that thousands of books and papers have been written about the culture, institutions and governance of these societies. References are provided for those that wish to explore these discussions in more detail.

The U.S. is an example of a country that has a history of strong and sustained entrepreneurship and economic performance. Some argue that the philosophy of American Exceptionalism (Lipset, 1996) provides an explanation of why the U.S. has historically and in a contemporary context been a highly innovative and entrepreneurial country. American exceptionalism argues that the country's origins in a new land mostly unsettled except for Native Americans provided a context (the frontier) for settlers from Europe that lasted nearly two centuries. As early settlement gradually unfolded across the North American continent, the land remained sparsely populated as the frontier moved west and provided new land for population growth. Survival required great individual skills with little or no help from an organized government as even local government was slow to evolve in many places until much later in the history of the country. Survival required enormous self-reliance in solving problems and simply surviving.

Further, frontier America had a great distaste for central government that derived from the effect of control exerted by European kings that led to the American Revolution. As a consequence, central power was divided in the new country's constitution with states retaining some of the powers (social and economic welfare welfare) except when multiple states of the U.S. were involved. The remaining power was mostly accorded to a central government, and therein with judiciary, legislative and executive

branches of government to ensure that attempts to expand central control would face staunch barriers. So another element of the U.S. governance model is that power for governing was highly decentralized reflecting the founding fathers' fear of the effects that strong central government control could have on individuals' rights. This is the source of the strong individualist cultural trait that emerged and still persists in the U.S.

Residents of villages and towns, given their relatively small scale, like individuals and families living on the frontier, evolved with a strong sense of community self-reliance with groups often forming to solve local problems as noted by de Tocqueville in the mid-19th Century (Lipset, 1996, 17-20). Such actions among the European nations were viewed as the responsibility of the king or government. This strong individualist and self-reliance tendency in the growing U.S. national helped support and internalize traits such as a lack of fear of failure and willingness to start a company or even think of entrepreneurship as a way of economic support. These are traits related to and often believed to be required for entrepreneurial behavior. So, support in the U.S. for the institutions that support entrepreneurship are embedded in the evolution of the country, its institutions and people, and its governance model.

The American culture and its governance and institutions are, like in most countries, a function of historical development erected on given natural resources including geography. As a consequence of America's unique and "exceptional development", cultural support for entrepreneurship is embedded deeply in the ethos of its people and reflected in its institutions and governance which in turn reward individual merit and determination, and a belief that government support for entrepreneurship should be limited to few boundary defining regulations. The U.S. does provide special support (see *SBA.gov* for these programs) for those who are disadvantaged e.g., handicapped, the poor, other special groups such as women, minorities, and lagging regions. This is not much different than in other countries including the European Union. However, the scale and level of support appears to be less in the U.S.

Europe's countries and regions for the most part have evolved out of relationships that developed in medieval times whereby people were part of a feudal society headed by a lord that granted land and other favors to vassals (larger land holders) and tenants (that were granted lessor favors). In turn vassals and tenants were obligated to contribute militarily and productively to the lord's fiefdom (the land domain that made up the lord's land). In turn the lord was expected to provide safety and security and general community support and welfare services (see Stephenson, 1942 and Bloch, 1961) to these dependents. Adam Smith (1776) refers to this period of European society as a «feudal government». The feudalism concept like all labels summarizes societal patterns and thus a concept that only partially and imperfectly captures the reality (Brown, 1974 and Reynolds, 1994). Nonetheless, given the summary form of the discussion the concept of feudalism, it is used to provide insight into the origins and partial nature of governance and institutions in many European settings. There are of course caveats.

The medieval world provided a hierarchical social order with the king at the top, lords that were granted land by the king, vassals that were granted land by the lords

and tenants that were all provided safety and support by the vassals, lord(s) and the king for services. This created a society, economically at least, of linear dependency that can be argued to have had an expectation and dependency on the part of the tenants that leadership for solving problems would be provided by the vassals, lords and king in that order. Some argue that this set a norm of expecting «government» to assume responsibility for solving communal problems (Lipset, 1996). Today, some argue, that members of the European countries and many of their former colonies (e.g., Canada and Australia) look to and expect their government to solve problems more so than in the U.S.[1] The governance model that has prevailed in these countries tends to place a commitment on a stronger role of government for supporting entrepreneurship. Thus, the rationale for government involvement in promoting the economy and entrepreneurship is stronger in these countries than in, for example, the U.S. At the same time, government's role in supporting entrepreneurship and innovation development in China is much stronger as described below. A strong supporting role of government for entrepreneurship is viewed as seemingly contradictory in that by its very nature self-reliance is required, not dependency. The possible roles of government are examined at the end of this part of the paper.

In contrast to the U.S. and to some extent the European countries, China was formed and reformed under various centralized dynasties over several millennia that produced a culture with a belief in a strong central government whereby citizens assume that it is the responsibility of the central leadership to solve many communal problems, especially in the larger settlements. In the rural areas problems often fell to individual initiative for resolution. This combination of a strong central government and entrepreneurial and communal self-reliance, while seemingly contradictory, appear to be viewed as cultural elements that have persisted for centuries in China (Kerr, 2013).

With the beginning of the Opening Up policy in China in 1979 it took the first step toward modernizing its economy and society. Opening Up promoted engaging markets of the world, first with increased imports to China, and later moving from an import first to export oriented growth strategy. Nascent manufacturing led by State Owned Enterprises (SOEs) existed and were expected to provide expanded goods production for export as this strategy unfolded. It also advocated decollectivizing its huge and bulging agricultural sector where most of its population lived (Kerr, 2013).

From 1990 to 2015 China became the dominant manufacturing economy in the world mostly fueled by imitation innovation. Yet, one part of the Opening Up policy agenda was for China to become a self-innovation based economy. From the beginning of modernization of the economy and subsequently, China has devoted huge resources to building the innovation/entrepreneurial economy (Yu *et al.,* 2016). Many of the efforts such as the Torch Program and the technology innovation initiatives failed to generate more than a few self-innovation outcomes (Yu *et al.,* 2016). Recently some observers sense that this is changing with significant advances occurring in many of the inputs to the innovation process such as the R&D expenditures, in-

[1] Of course there are exceptions in each country but the purpose here is to identify and describe broad and representative patterns.

creased engineering graduates, a major presence of Chinese companies in technology intense sectors such as telecommunication and information technology, internet and social media, and a number of world class innovation centers (Wired July, 2014. The rise of four Chinese internet and social media technology companies into the top ten ranking in the world with three joining only since 2013[2] (Financial Bitcoin & Cryptocurrency News, 2015) provide evidence for this claim. While China's economy is still not a fully developed self-innovation economy, it has made significant progress toward this goal. So, how has it been possible to have achieved developed country status in the span of little more than one generation?

China's combination of strong central planning and control (strong compared to most developed countries) combined with an experimental approach are largely responsible for its rapid economic growth and development. This seems to be consistent with its cultural history as the government has played a strong and major role in building and evolving the economy from undeveloped to the verge of being a full innovation based economy.

Bell (2014) argues that the Chinese model of governance is multi-tiered. Its highest level leaders reach the top positions only on the basis of meritorious performance over many years that include a wide range of training and testing in addition to detailed evaluation of outcomes. Bell notes that at the community level (village and districts in cities) political leaders are, for the most part, elected and at this level the Chinese governance process may be considered to be democratic. Very importantly the middle level is experimental.

China's development has been led by numerous experiments whose evaluation has led to adoption of practices that both enable modern development to occur while at the same time fitting into a strong central government including diffusion of best practices to sub-national regions. Bell's model is, of course, conceptual and applies more in some cases and times, rather than others. That said Bell's argument is that this governance conception applies generally and provides a backdrop for understanding how governance works in China. The use of experimentation and related methods and their results have enabled broad adoption of best practices that have in turn enabled China to become one of the large and dominant economies of the world.

China has had to make many adjustments to begin to reach its goal of becoming a self-innovating economy. While innovative and entrepreneurial behavior was a recognized attribute of the largely rural and uneducated population, much of that adaptive tendency appears to have been lost as its higher education system expanded to produce increasingly large numbers of scientists and engineers, and college graduates employing primarily a rote learning model, at least until recently. The result of change oriented experiments led recently to altering the rote based education system to one that also values extracurricular activities where "learning by doing" and from "making mistakes" are more valued than in the past, and where the score on the national entrance examination is not the only college admission criterion.

[2] These Chinese top 10 internet and social medial companies are: Alibaba, Baidu, Tencent and Xiaomi.

Experiments to learn how to innovate as illustrated by the early technology and innovation centers led in time not only to the change in education policy but also to adoption of a strong repatriation program that would bring experienced Chinese expatriates to assist and help guide the further development of the innovation centers. Only with these and other changes has China become a more self-innovation capable economy. Despite these developments it is clear that China is not yet a fully developed innovation economy as suggested by various critiques of this effort (Yu *et al.,* 2009 and Applebaum *et al.,* 2016). What seems to be at the core of its move toward a more self-innovative and entrepreneurial economy is its governance system that vets aspiring leaders through elections and only advances them to top positions on merit coupled with an experimentation used to find and guide a pathway to the desired outcomes and then disseminating learned best practices to other parts of the country.

China's governance model is by far the most committed to centrally controlled support for entrepreneurship and development. It has enabled allocation of huge resources for several decades to the pursuit of self-innovation and entrepreneurship and with some recent success as witnessed by recent reports. Yet it has not fully created a self-innovation and entrepreneurial economy (Yu *et al.,* 2009, and Appelbaum *et al.,* 2016). That said the success that China has had in a relatively very short period raises the question as to what is the optimal role of government's participation in promoting entrepreneurship. It seems that most countries despite their culturally based governance systems and institutional frameworks have general agreement that the central government's role should include assistance of various forms to those who are in some ways disadvantaged and that some boundary conditions need to be set by government via regulatory means to guard against unfair competition and monopolistic outcomes. Both Europe and to an even greater extent China have demonstrated that significant strides in entrepreneurship and innovation can be achieved with stronger government assistance programs than in the U.S. The research question that faces entrepreneurship scholars and practitioners is how to shape this assistance for optimal outcomes within the context of regional and national governance and institutional frameworks. This is a major research question that is fundamental to discovering the best role of government in supporting entrepreneurship development. The answer to this question is embedded and evolving as the experience of the three governance models for the U.S., Europe and China unfolds. Of course there are other governance models than those discussed here but they can be organized on a continuum from strong government involvement to relatively weak involvement. Comparative research of the development of the role of government under the three different governance frameworks is needed to learn what the optimal government role in entrepreneurship development is.

Part IV: Special Groups in Entrepreneurship: Research and Policy

There are various functional areas to which many countries opt to provide assistance to. These are rationalized on the basis of enhancing equal opportunity. These

include: Gender, age (elderly and youth), race, ethnicity and poverty. Other areas that have emerged as important in development policy and thus the literature include: Family, health, and technology based entrepreneurship. In this part of the paper several of these more specific sub areas of entrepreneurship are examined and discussed.

Age: Seniors and Youth

It is not well appreciated that the rate of new firm startups is higher in the over 64 population segment than is commonly believed and is higher than for most other age groups (Zhang, 2015 and 2007). There are several reasons for this. First, many elderly have income shortfalls after retirement which motivates them to start or continue to grow their businesses. Second, many also are bored in retirement like my neighbor who is 83 and has started or acquired many companies in his life yet he just acquired a new company to reenergize his life. According to him he was bored! Third, the elderly often have a great deal of entrepreneurial knowledge and business experience, and thus have relatively well developed and relevant skills that make starting and growing a new business a viable option. Finally, life spans are increasing along with health quality, which is enabling seniors to work longer and more effectively, and, some prefer to work for themselves. With the elderly proportion of the population aging and enjoying good health, entrepreneurship in this group will continue to increase.

Yet we know only a little about entrepreneurship and the elderly at the local or regional level regarding their ease of starting a business, types of assistance needed, contribution to job growth and what the primary correlates at the regional level are. Also, one questions how much of entrepreneurship at this age group is productive or just mostly unproductive? For sure some is unproductive in an effort to simply increase income but some may also produce HGFs. Knowing the proportions here would be helpful in setting effective job creation policies in general and for the elderly. Entrepreneurship among the elderly is a research area that is ripe for research in general and more specifically at the regional level today and in the future. For example, there are many unanswered questions about the geographic distribution of elderly startups. For example, are the elderly more likely to start a business when residing in a retirement community or elderly clusters than when living in more distributed locales?

Jack Goldstone in his Foreign Affairs article entitled «The New Population Bomb» (Goldstone, 2009) examines the rapidly growing youth segment of the population in developing countries. The proportions are high, well above 20 percent of the total population in many cases, as are youth unemployment rates. These large youth populations with high unemployment levels are associated with idleness and attraction to alternatives other than work that is generally not so available such as joining terrorist groups and pursuing other socially destructive pursuits. This is Goldstone's ticking time bomb! Among the solutions, all of which will take time, is entrepreneurship. Promotion of entrepreneurship among the youth segment of population

should thus be one of the high priority society and government assistance programs throughout the developing world. While some progress has been made in understanding what is required in the way of hard and soft infrastructure for successful youth entrepreneurship. Such measures include "makers places" that offer instruction as needed and access to resources to undertake innovative activities including starting companies and organizations in the for profit, non-profit and public sectors. Much research is needed to learn how to more successfully attract and assist youths to undertake entrepreneurial activities.

Innovation and integrating knowledge into the creation and growth of organizations is what entrepreneurs do, i.e. one may view entrepreneurs as the managers of the innovation process. Innovation is often if not usually a local process, at least at start up because the process requires not only general knowledge but also tacit knowledge as well which is frequently only locally held. Thus, any youth unemployment and entrepreneurship initiative should be embedded in its local regional context. This conclusion is valid even in the age of the internet that enables considerable knowledge collection but as to date the knowledge of how to create new successful companies and organizations without face-to-face communication is not well understood. Research into youth entrepreneurship is ripe for major development and in this context there is an opportunity for further clarification of the role of both the government and internet communication.

Gender

The level of women entrepreneurs in most developed countries is measurably less than 50%. There are several reasons for this. First, there is a lower proportion of the female population in the workforce due to historical factors like the more traditional care giving and supporting role of women in society, child rearing and nurturing. Also, research has emerged that provides evidence that women in general tend to be more risk averse than men (Borgans *et al.,* 2009 for one example). This latter aspect is problematic in that even if the data is correct, and some argue that it may not be or at least agree only when it is highly qualified (Nelson, 2012), it is an ecological fallacy to make this assertion. Many women have been successful entrepreneurs and the number and proportions have been increasing steadily over the past decade or two. To imply that individual women are or tend to be risk averse because they are female is problematic. Further, there are a variety of mitigating factors in the general pattern, e.g., men's risk taking tends to increase if the decision is in keeping with achieving strategic goals or when under stress, women's risk taking tends to decrease under stress (Sundheim, 2013). Finally, age, income, education and physical height may also be mitigating factors in the propensity for entrepreneurial pursuit among both men and women and are likely positively correlated in both groups. There remain many questions about what the positive and negative correlates are that may be impacting the level of entrepreneurship between and for the sexes. Additional research is needed for a better understanding.

Most important for the current discussion is that women are increasingly rising to senior business and organizational leadership positions and they are also increasingly undertaking the formation of companies. Not only are the numbers significant and growing but more than a few females have risen to senior leadership roles and performed well. Despite these developments there is a role for government and universities to create specific training programs for women aspiring to entrepreneurial careers and for assisting them in other ways such as helping prepare, find and link female advisors, investors, trainers and those who have held senior leadership positions in private and non-profit organizations to aspiring female entrepreneurs. Providing such support in addition to that already available like that offered by the U.S. Small Business Administration (*SBA.gov*) will help propel female entrepreneurship. The same arguments can be made for other disadvantaged groups including minorities, other capped and the poor.

There is a need to evaluate female entrepreneurship assistance programs that are provided by government agencies and non-profits One effort in this direction is the publication of the first Global Women Entrepreneur Leaders Score Card in 2015 (Aidis *et al.,* 2015). This scorecard is similar in structure to the GEDI tool and in fact inspired by it in that it has multiple measures that are bundled into a fewer number of dimensions that in turn provide scores for measuring the level of women entrepreneurial performance across many countries of the world. While this is a good start for developing an evaluation tool it, like the GEDI, REDI and other ecosystem measurement systems, suffers from the potential problem of attributing aspects of the population of women at the national level to all women and individual women, i.e. committing ecological fallacies. Research at highly disaggregated levels is needed to help reduce misleading conclusions about female entrepreneurship. So there is an opportunity for new research at the sub-national regional level which is the lowest level that can be argued to be a functional economic region.

Family and Technology Groups: and Entrepreneurship at the Regional Level

There are other groups with an evolving or huge literature concerning entrepreneurship: Family and Technology Businesses. The literature on families and entrepreneurship and growth in the regional context is quite recent and has been area of at best modest inquiry for some time. Recent research (Stough *et al.,* 2015) has provided some insight into the role that family businesses and entrepreneurship play in regional economies. For example, some regions have a high proportion of family businesses that play a huge role in the strategic development and maintenance of the regional economy. Further, there are regions where family businesses are spinning off many new startups. The advantage of family based startups is that the entrepreneur has access to large amounts of high quality business processes and skill knowledge including readily available capital. Yet, despite these cases and possibilities, little is known about the role family businesses play in general regional economic develop-

ment in guiding investment and policy there. There is considerable opportunity for new and interesting research initiatives in the role of family businesses and entrepreneurship in field of regional economic development.

A huge body of literature has evolved over the past 25 years in the area of technology driven regional economic growth. Consequently there is insufficient room in this paper to treat this topic in much depth. The reader is invited to review work by Ed Makecki to gain greater insight into this area (Malecki, 2011 and 2007). It is important to note that waves of new technologies have and continue to unfold and that entrepreneurs have effectively helped fuel the formation of companies that have translated the associated research and technology possibilities into new marketable products and services (Stough *et al.,* 2013). Most regions around the world are investing in technology development and related innovation and entrepreneurship policies in an effort to participate in associated growth including the use of industrial clustering and embedded entrepreneurship (Stough, 2015). Often these efforts are embedded in policies fostering industrial cluster based economic development and growth. Some regions have been highly successful at this and others not so successful. In applying a life-cycle model to the interpretation of technology cluster dynamics Stough (2015) provides evidence that entrepreneurship levels rise as clusters pass through the early development stages and decline as cluster maturity and decline set in. Entrepreneurship may also be critical to cluster resiliency and regeneration. The quest to learn more about how regions can build economic ecosystems that can support fruitful technology driven economic growth continues and will remain an important regional research topic for some time as it is a central feature of economic growth in the knowledge age. As noted the role of entrepreneurship in promoting technology and cluster related economic growth is important and begs for research to further understand the relationship between cluster dynamics and entrepreneurship.

Part V: Summary and Conclusions

This chapter has focused mostly on high growth companies and firms (HGFs) and the factors that appear to be responsible for their origins, development and growth. Entrepreneurship ecosystems are argued to be fundamental to the development and growth of HGFs. The measurement of these ecosystems was examined in some detail with a case description of the GEDI (and its regional orientation REDI) for measuring them. The application of GEDI and REDI to regions in Spain, selected Spanish regions and a group of innovative countries were used to illustrate its application. Various problems persist in linking the ecosystem concept to HGFs not the least of which is the ecological fallacy that exists when an effort is made to apply the findings for the whole to one or more of its subparts, e.g., the region compared to the nation. Research is needed to further develop the ecosystem metaphor when applied to regional entrepreneurship and in particular when it leads to development and growth of HGFs.

The Chapter also recognized that national and regional governance and institutions are particularly critical components of regional entrepreneurship ecosystem performance. Governance systems and institutions were examined and summarized for three settings (U.S., European countries and China) and compared in an effort to illustrate major differences particularly in the role of «government in governance». The U.S. was viewed as having the least government intervention in the promotion of entrepreneurship; European countries tended to provide stronger policy support; and, China as having the strongest commitment to the public sector role. In this context the seemingly inherent contradiction between strong government support and the self-reliance required to execute company startup and growth was recognized. Research that monitors the relationship between entrepreneurial performance and the level of government participation as part of governance systems will be of great value over the near future as it will help researchers and policy makers to understand better where governments can positively support entrepreneurship and where their intervention will likely detract from fruitful outcomes.

The last major part of the paper examines, in brief, entrepreneurship support for special groups and some sub-areas of research that are emerging or have persisted. First, two rationales have been offered for public policy support for specific groups in society. One of these is fairness and equity for the measurably disadvantaged, e.g., youth, aged, women, minorities, migrants, other capped persons, and the poor. The policy and program assistance applied to enable these groups to establish and grow new companies is somewhat similar across the developed countries and includes advisory, training and financial assistance in the building and growth of companies (for the U.S. see *SBA.gov*).

Two other groups or bodies of research were also recognized. First, family businesses and entrepreneurship in the form of spinoffs were considered. Heretofore these businesses and their spinoffs' role in regional economic development were dormant or mostly unrecognized. Recent research has emerged that begins to lay out research issues and questions in this arena which provides some provocative opportunities for future research agendas. Secondly, technology and related innovation driven economic growth is recognized as a highly important regional research area as it has become a major if not dominant policy objective for most regions. The reason for the persistence of interest in this research is examined with references to some literature over the past 10 years provided for the interested reader as the topic is far too extensive for more than cursory mention and examination in this chapter.

Finally, potential topics for researchers in general and more specifically young researchers are summarized here. They appear in more detail at the end of the various analyses in the paper. First, there is much room for research testing and examining the effect of various ecosystem factors on entrepreneurship and in turn regional economic growth and development. Second, research to expand and deepen knowledge about the role of governance and institutions in successful entrepreneurship systems are considered at the end of Part III. The importance of research into these factors lies in the fact that different cultures produce different institutions (defined as rule systems as proposed by the new institutional economics) and thus governance dimensions which,

in turn, make it difficult to measure their relative importance in entrepreneurship systems. A cross national comparative analysis is offered in the paper to help illustrate this issue and its importance across different cultures. Finally, Part IV examines equity issues in entrepreneurship and the related rationale for public policy intervention. Much research is needed to better understand what sort of policies and practices are needed to enhance the success of entrepreneurs in such groups as: male vs. female; seniors and youth; ethnic minorities; migrants; family and technology based entrepreneurship. These and related research opportunities are presented throughout the paper.

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