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SPECIAL ISSUE PAPER

The evolution of regional entrepreneurship policies: "no one size fits all"

Raquel Ortega-Argilés[1]

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Abstract
In the last two decades, entrepreneurship policies have gone through a radical transformation in many parts of the world. New theoretical and empirical approaches have helped to identify better the drivers of entrepreneurial creation, the main actors in the process, and the significant contribution of entrepreneurship to socio-economic prosperity. One of the main conclusions of these new theoretical and empirical approaches is that the drivers and outcomes of entrepreneurship are heavily shaped by place. There is no single ideal entrepreneurship policy formula because entrepreneurial mechanisms take a different form depending on different places. However, concepts such as path dependency, industrial ecology and heritage, connectivity, culture, and intra-and interregional knowledge spillovers are all linked in different ways with regional entrepreneurship in general and the Entrepreneurial Ecosystems literature. This paper discusses the impacts of these different influences on the evolution of modern entrepreneurship policies, examines what the current evidence points to, and identifies areas for further consideration. Examples will be drawn from different countries and regions. On the basis of the evidence reviewed, the paper contends that both conceptual and policy-thinking regarding the relationships between entrepreneurship and place are increasingly shifting to the challenges facing less successful regions, even though the current approaches are heavily based on the insights of successful places.

JEL Classification L26 · L38 · L53 · R11

1 Introduction

In recent decades, entrepreneurship policies have gone through a radical transformation across the world. From traditional perspectives based on subsidising startups, the emphasis has shifted in current perspectives towards creating, maintaining, and

✉ Raquel Ortega-Argilés
r.ortegaargiles@bham.ac.uk

[1] Birmingham Business School, City-REDI Institute, Birmingham, England, UK

improving established worldwide value chains (McCann and Ortega-Argilés 2016a; McCann and Ortega-Argilés 2019).

New theoretical and empirical approaches have helped identify better the drivers of entrepreneurial creation, the main actors in the process and their significant contributions to socio-economic prosperity. One of the main conclusions of these new theoretical and empirical approaches is that entrepreneurship is heavily determined by place (Acs et al. 2015; Audretsch 2015; Fritsch and Mueller 2004). A single ideal entrepreneurship formula does not exist because entrepreneurship takes a different shape depending on the regional basis. Regions differ in many aspects. Some differences can be found in whether they are rural, peri-urban or urban; natural resources-based or not; in terms of their degrees of fiscal decentralisation; whether they are lagging or innovation-driven; and also on the way that regions respond to changes and their capacity for resilience when confronting grand challenges such as globalisation, automation or ageing societies (Barca et al. 2012; Iammarino et al. 2019; Prenzel et al. 2018; Terzidis and Ortega-Argiles 2021). Concepts such as path dependency, embeddedness, industrial ecology and heritage, connectivity, culture and local norms, and interregional knowledge spillovers all play an essential role in how we think about entrepreneurship in its local context and how we can best construct meaningful policy frameworks for industrial upgrading and resilience (Rocchetta et al. 2021; Neffke 2011).

The importance of thinking about the drivers and inhibitors of entrepreneurship at the regional level is highlighted by the nature and scale of the fundamental changes in the global economy. During the last three decades, the world economy has changed almost out of recognition, and new opportunities and challenges have emerged and affected regions differently (Barca et al. 2012; Iammarino et al. 2019; Terzidis and Ortega-Argiles 2021). Technological changes such as advances in telecommunications, automation, 3D printing and the 'internet of things' have reduced the need for prior scale economies in many industries, thereby potentially opening up new opportunities for new and smaller firms. While this is true in manufacturing, this is also the case in service industries, as witnessed by the rise in innovative business models such as Uber and Airbnb. At the same time, the globalisation and fragmentation of production processes have created opportunities for new forms of local economic Specialisation to respond to consumer demand. In particular, these changes may make it easier for groups of related small and medium-sized enterprises (SMEs) to respond to modern consumer demands for more personalised goods and services in situations which may be unattractive for large corporations. In particular, increasing disposable incomes have created demands for high-quality products, and there may be new opportunities for startup SMEs to capitalise on new niche markets.

In order to best help firms respond to these opportunities, governments in many countries have implemented new policy measures and instruments based on which they hope to increase economic activities and hold on to comparative advantages. In particular, given the importance of entrepreneurship for local economic growth and development, governments increasingly opt to use public policy to help make places more entrepreneurial (Reynolds 1999; Zacharakis et al. 2000; Murdock 2012). However, this policy shift also reflects more fundamental shifts in both analytical and

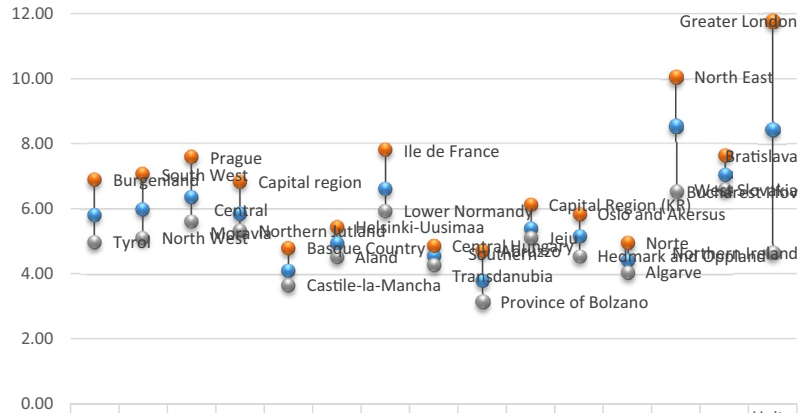
empirical approaches to entrepreneurship which has taken place in recent years, and it is not without criticism (Parker 2007; Shane 2009). Therefore, understanding these shifts is essential if we are to make sense of the changing policy landscape.

This paper will discuss how our understanding of the importance of the local context in shaping entrepreneurship has evolved and how our growing understanding has reshaped the entrepreneurship policy frameworks that are being developed. We will examine different policy approaches emerging in different parts of the world and identify the core elements which shape these various approaches. The rest of the paper is structured as follows. The following section discusses the relationship between entrepreneurship and regional development in general and in the context of regional entrepreneurship ecosystems. The third section discusses the traditional and evolving basis for entrepreneurship policy, including market failures and governance issues. The fourth section provides a brief discussion of the experience of entrepreneurship policy in the US and the EU, and the fifth section concludes.

2 Entrepreneurship and regional development

Entrepreneurship is the process of establishing and expanding a new business. Entrepreneurship is a process composed of different activities and social phenomena emerging within a broader society (Lundström and Stevenson 2005). Following Joseph A. Schumpeter, who conceived of the entrepreneurial venture as "the fundamental engine that sets and keeps the capitalist engine in motion" by creating new goods, inventing new production methods, devising new business models, and opening new markets (Schumpeter 1942, 83). Since the late 1990s, a wide-ranging literature has considered entrepreneurship to be the driver of prosperity (Birch 1987; Brock and Evans 1989; Carree et al. 2002; Carree and Thurik 2003; Harper 2003; Coyne and Lesson 2004; Audretsch 2006; Audretsch et al. 2006; Gilbert et al. 2006; Baumol and Strom 2007) and a key factor of economic development (Holcombe 2007; Naudé 2010; Brown and Thornton 2013; Valliere 2016; Jia 2018). Low unemployment rates will characterise robust entrepreneurial societies as more businesses are created to take advantage of the potential profit opportunities. In the long run, the same societies will generally have a more developed economy, with more (and more complex combinations of) physical capital and higher levels of investment in human capital, with a population that typically will be richer than otherwise (Lucas et al. 2018).

However, within the literature on regional development, there has been a clear focus in trying to determine what are the mechanisms underlying the promotion of local entrepreneurial capital and its potential knowledge spillover processes (Audretsch and Kleiback 2004; Acs et al. 2009; Welter 2011; Varga et al. 2018). The evidence suggests that these impacts are dependent variously on: the levels of economic development (Van Stel et al. 2006); the interregional disparities in countries (Verheul et al. 2001; Porter 2003); the national institutional arrangements and the social payoff structure (Baumol 1990); and their ability to turn knowledge into regional growth through the creation and dissemination of knowledge (Audretsch and Keilbach 2004; Acs et al. 2009).



	Austria	Bulgaria	Czech Republic	Denmark	Spain	Finland	France	Hungary	Italy	Korea	Norway	Portugal	Romania	Slovakia	United Kingdom
Regional Average	5.81	5.98	6.35	5.84	4.11	4.95	6.61	4.56	3.81	5.39	5.16	4.43	8.55	7.03	8.43
Maximum	6.89	7.06	7.58	6.82	4.8	5.44	7.8	4.87	4.72	6.12	5.83	4.96	10.05	7.62	11.78
Minimum	4.98	5.11	5.61	5.33	3.67	4.53	5.93	4.28	3.14	5.11	4.55	4.05	6.52	6.58	4.66

Fig. 1 Regional Share of 3-year surviving startups (% of all firms born, same sector, same size class), year 2013. *Source*: McCann and Ortega-Argiles (2019)—using OECD data

Figure 1 demonstrates that all countries display interregional differences in the survival rate of new firm startups. In particular, countries with higher rates of new firm survival also tend to display higher interregional differences in the same rates. These differences are vast in some countries, whereas in other countries, these differences are minimal. Specifically, interregional differences in startup survival rates are very high in the UK, followed by Romania. A group of countries including Austria, Bulgaria, Czech Republic, Denmark, France and Italy display interregional differences in the survival rates of firm startups which are less than one-third of those displayed by the UK. In contrast, the interregional differences in Spain, Finland, Hungary, South Korea, Norway, Portugal, and Slovakia are less than one-quarter of those evident in the UK.

We know that entrepreneurship has an increasing role in explaining: economic growth, productivity, employment and competitiveness (Carree and Thurik 2003; Acs and Armington 2006; Braunerhjelm et al. 2010; Audretsch et al. 2015; Varga et al. 2018); the creation of employment and wealth (Fritsch and Mueller 2004; Mueller et al. 2006; Malchow-Møller et al. 2011; Varga et al. 2018); and economic dynamism and the innovation landscape of locations (Acs and Audretsch 2005; OECD 2013). In terms of regional development, the available evidence strongly points out that entrepreneurship potentially has short-term and, more importantly, medium-and long-term consequences for regions. From Table 1, the differences in the scale of these interregional startup survival rates in some countries suggest that the medium-and long-term regional development trajectories may be very different in these cases. In contrast, in more equal countries, these differences will be minor.

Table 1 Spanish entrepreneurial regions

Leader Entrepreneurial Spanish Regions	Madrid, Cataluna, Pais Vasco, Asturiasand Navarra	Mainly urbanized regions High level incomes Higher innovation ratios Higher shares of higher educated population
Average Entrepreneurial Spanish Regions	Aragon, La Rioja, Comunidad Valenciana, Galicia, Ca5tilla Leon and Canarias	Average values reflecting a similar environment to the average of Spain as a whole
Lagging Entrepreneurial Spanish Regions	Andalucfa, Baleares, Cantabria, Murcia, Castilla La Mancha and Extremadura	Low income levels and high unemployment rates. Based on agriculture with a lower innovative companies, low patenting activity low share of its workforce with higher education

Source: based on the REDI index, Acs et al. (2015)

The reasons why entrepreneurship is so important in influencing each of these critical regional economic dimensions is because of its influence in reshaping the composition of the regional industrial base and the emergence of new economic structures (Acs and Varga 2005; Feldman and Audretsch 1999; Fritsch and Mueller 2004, 2007). New entrants seem to be important catalysts of technological innovation, even when they prove to be business failures, as they often do (Scherer 1992; Utterback 1994) because, as we know from Schumpeterian thinking, failure is also a key component of innovation. These new entrants help to reshape the existing patterns of industrial agglomeration and diversification, industrial relatedness and their influence in regional market selection processes (Audretsch and Thurik 2001, 2004; van der Panne 2004; Frenken et al. 2007; Frenken and Boschma 2007), in ways that are closer to the current market trajectories.

However, although entrepreneurship can foster local technological and structural change, the evidence suggests that the degree to which new entrants can prosper and effectively reshape and modernise regional economies varies significantly between places. In terms of new firm formation, the key differences here relate to three broad themes: location, human capital and innovation, and the state's role.

Over the last thirty years, the rapid developments in economic geography and urban and regional economics, especially since the seminal works of Krugman (1991a,b), Porter (1990), Scott (1988) and Glaeser et al. (1992), have transformed our understanding of the role played by location in shaping economic development. In particular, the role of spatial externalities in explaining the entrepreneurial performance of places is linked with the concept of agglomeration economies. Due to their economic structure and history, certain types of places offer key advantages for entrepreneurs, such as access to finance and access to key knowledge networks and even better infrastructures in today's digital world (Welter et al. 2008; Goldfarb and Tucker 2019; Cusumano et al. 2019). Aspects related to population growth and density and the size and market potential of the region (Modrego et al. 2014) will determine the diffusion of externalities from entrepreneurship. This is especially so if these places also offer clustering advantages associated with job-matching and the sharing of inputs.

Nevertheless, as well as scale, we also know that knowledge diffusion is heavily determined by industrial Specialisation, with more structurally diverse regions tending to be more conducive to entrepreneurial startups. Diversified regions offer more varied sets of knowledge networks, thereby allowing entrepreneurs access to a broader array of knowledge domains and sources (Bishop 2012; Colombelli 2016; Guo et al. 2016; Tavassoli and Jienwatchamaramongkhol 2016; Basile et al. 2017; Fritsch and Kublina 2018; Content et al. 2019; Ejdemo and Ortqvist 2020). Also, such places tend to exhibit higher degrees of bridging social capital (Putnam 2000), such that the spillovers of specialist knowledge from one arena to another tend to be more easily facilitated in these types of contexts. The result is that in terms of the contribution of entrepreneurial growth to regional growth, the differences in the role of sectoral composition tend to persist over time (Audretsch and Fritsch 2002; Fritsch and Schmude 2006).

Another aspect of places that is seen as essential for fostering entrepreneurship is human capital and especially the cultures of creativity and innovation that

some places exhibit. As Florida (2002) and other authors have demonstrated, the attraction of human capital to a region and the facilitation of clustering and networking significantly contribute to the level of entrepreneurship in places due to the potential knowledge spillovers that arise from their presence in local economies. Empirical analyses have typically proxied the role of human capital by indicators of educational achievement, allied with the presence of universities and research centres. There is strong evidence that higher education positively impacts local high-growth entrepreneurial activities (Autio 2005). Moreover, university expenditures on R&D typically have a noticeable impact on new firm formation in regions surrounding the universities and research institutions, especially in 'technology-oriented firms' (Kirchhoff et al. 2002). On the other hand, while higher education generally increases self-employment, it can also reduce its quantity (Reynolds et al. 1994; Burke et al. 2000). At the same time, however, in recent years, there have also been significant efforts to develop more subtle and nuanced indicators of creativity and innovation-orientation, beyond only educational scores or institutional research expenditure, which better reflect the complex relationships between different types of human capital and research activities and highly creative entrepreneurship.

Substantial, diversified and high human capital locations also tend, in general, to be places with a solid local financial sector conducive to entrepreneurship. However, startup and entrepreneurial credit availability tend to differ markedly between places. In particular, the presence of a buoyant local venture capital market will tend to directly affect the success of a local, regional system of entrepreneurship (Szerb et al. 2020) and digital entrepreneurship (Giones and Brem 2017).

In general, given the right institutional environment, entrepreneurship is seen as the fundamental force driving economic performance (Baumol 1990). Entrepreneurial attitudes, startups' characteristics and new firm performance are all influenced by the institutional and macroeconomic context, which itself tends to display a stickiness or persistence (Andersson and Koster 2011; Andersson et al. 2011; Fritsch and Wyrwich 2014, 2017; Fritsch et al. 2019). Young firms' post-entry performance differs between countries because of different market, institutional and regulatory mechanisms, and differences in labour and product markets (Aghion et al. 2005; Audretsch and Keilbach 2007, 2008; Welter 2011). Typically, more demanding regulatory environments tend to reduce the levels of entrepreneurship (Djankov et al. 2002; Capelleras et al. 2008; Van Stel et al. 2006). At the same time, in terms of the processes of firm creation, access to finance, the quality and quantity of human capital, and proximity to scientific and technological infrastructures, all play longstanding and fundamental roles (Boschma and Lambooy 1999; Okamuro and Kobayashi 2005). Also, governance issues are nowadays increasingly understood as being critical. Nevertheless, the nature or the quality of the governance arrangements, conducive to both entrepreneurship and good entrepreneurship policies, may also be somewhat different in different contexts, depending on the overall national governance arrangements. Environmental characteristics such as institutions and their evolution over time (Scott 1995; Kostova 1997) and the ability to maximise regional competitive potential by producing the suitable institutional capacity are all argued to be critical for regional development (Amin 1999).

In the entrepreneurship arena, the role of public policy is influenced variously by the size and structure of the governance and institutional system, and the quality of multi-level government approaches to entrepreneurship. In terms of the regional entrepreneurial policy, what might be possible depends on the sub-national governance structure. In general, more devolved and decentralised governance systems will allow for more locally tailored entrepreneurial policy approaches. However, the performance of sub-national devolution processes is also conditional on the types of regulations, bureaucracy and administrative procedures in places and the levels of transparency, accountability or corruption in a region or country.

Regions differ both within as well as between countries. Therefore when discussing either entrepreneurship or entrepreneurship policy at the sub-national level, this interregional heterogeneity means that it is a more complex discussion than with similar discussions purely at the national level. Both entrepreneurship and entrepreneurship policy are heavily influenced simultaneously by multiple interacting factors of a local, national, or even international nature. Therefore, a holistic and systemic understanding of these factors and interactions is required to build up a comprehensive and detailed contextual picture of the regional drivers and inhibitors for entrepreneurship and the likely optimal entrepreneurship policy responses. A growing focus for policymakers in emerging and developing economies is the promotion of Entrepreneurial Ecosystems-EE (Isenberg 2010; Mason and Brown 2014; Hechavarria and Ingram 2014; Kenney and Von Burg, 1999; Audretsch and Belitski 2017; Brown and Mason 2017; Roundy et al. 2018; Stam 2015; 2018). Many scholars have contributed to explaining the development of entrepreneurship in a geography and its interactions; however, more recently, a new sub-discipline in the literature developing the concept, functioning and evolution of EE has been created. This literature strand also contributes to position the concept in a much wider 'Geography of Entrepreneurship' literature (Roundy et al. 2019).

EEs are understood as the interrelated set of actors, organisations, resources and values that generate and support local or regional entrepreneurial activities (Roundy and Fayard 2019). Entrepreneurship activity is considered as not being developed in isolation; on the contrary, it is dependent on its historical, temporal, institutional, spatial and social contexts (Welter 2011), including aspects such as infrastructures, social and cultural values and norms, a system of providers and customers, human capital, learning opportunities, as well as policies and institutions including financial ones (business angels, seed and venture capital, stock market and crowdfunding). This strand of the literature is based on concepts such as the ecological perspective on entrepreneurship (Aldrich 1979 or Hannah and Freeman 1977), entrepreneurial embeddedness and local environment dependence (Aldrich and Martinez 2001; Smith and Stevens 2010) or entrepreneurial dynamic capabilities (Roundy and Fayard 2019). Authors tend to consider the equally important emphasis on the literature on the roles of the environment (Dubini 1989) and "infrastructure" (Van de Ven 1993) supporting entrepreneurship.

EEs have been subject to criticism (Stam 2015; Roundy et al. 2018), because their illustrations typically have tended to focus on thriving and high-profile places such as Silicon Valley (Kenney and Von Burg 1999) or Edinburgh (Spigel 2016) treating places sometimes in isolation (Welter et al. 2017; Roundy 2019)

or providing static approaches not considering their evolution. New contributions have focused on their gaps, theoretical approaches (Roundy and Fayard 2019); life cycle (Mack and Mayer 2016); ecosystem performance (Stam 2018) and evaluation (Szerb et al. 2020; Varga et al. 2020) or other types of places (Roundy 2019).

EEs have also been adapted to the context of the digital economy and the 4th Industrial Revolution with new contributions extending the scope and actions of EEs by concentrating on the concept of Digital Entrepreneurship Ecosystems (Spigel 2016; Nambisan et al. 2017; Sussan and Acs 2017; Du et al. 2018; Elia et al. 2020). This research provides the DEE framework as a collective intelligence system, and thus a virtually global and context-independent system able to favour people and machine interaction and the creation of digital startups, considering technology not only as an "input" (Giones and Brem 2017) but also as an "enabling" factor (Sussan and Acs 2017). Some approaches, considering the role of emerging digital technologies or automation, such as the Internet of Things or 5G, question the role of place and its influence in the nature and interactions amongst entrepreneurial acts and digital agents. However, evidence shows that these digital startups tend to geo-colocate in a limited number of places attracted by the availability of talent and other inputs, thereby creating potential situations of digital dependency and digital exclusion for other locations, which eventually may create even higher potential intra-regional and interregional differences, making stronger the call for place-based measures (Goldfarb and Trefler 2018; Klinger et al. 2018). Previous waves of technological breakthroughs have shown that new technologies do not spread evenly across space and result in a variety of outcomes across regions. As a common less from past industrial revolutions is that preparations to benefit from new trends need to start early as a common lesson from past industrial revolutions because regions with a more educated and skilled workforce are those best placed to reap the benefits of new opportunities (OECD 2020). Therefore, understanding the requirements of digitally centred entrepreneurship ecosystems and their comparison and interaction with place-based ones seems to be important for addressing issues of their inclusiveness and resilience when thinking on the deployment of infrastructures or services to support entrepreneurship (Elia et al. 2020).

Such a systemic and holistic picture of EEs is provided, for example, by the Regional Entrepreneurial Development Index (REDI) methodology (Szerb et al. 2014, 2020), which integrates multiple economic, psychological, social and institutional influences on local entrepreneurship, and ranks these influences in terms of their importance in shaping the local entrepreneurial context. The REDI approach captures the dynamics of the overall regional *entrepreneurial ecosystem* and shows how the different factors and influences on entrepreneurship influence each other. All regions are shown to be different, with different drivers and inhibitors dominating in different contexts (Szerb et al. 2014, 2020; Acs et al. 2015). However, although the REDI index has a holistic and systemic analytical and empirical approach, this approach's critical issues are identifying the systemic weaknesses or bottlenecks. A system is only as strong as its weakest link. An example of the application of this methodology is the case of Spanish regions and their differing entrepreneurial capabilities.

Based on the sub-national application of the Global Entrepreneurship and Development Index (GEDI) for Spain (Acs et al. 2015), Table 1 illustrates the grouping of regions in Spain according to their conditions for entrepreneurship. Three main groups can be drawn. The group of *Leader Entrepreneurial* Spanish regions includes Madrid, Cataluña, País Vasco, Asturias and Navarra. This group comprises mainly urbanised regions with high levels of income, high innovation ratios and higher shares of the educated population compared with the average Spanish regional levels. The group of *Average Entrepreneurial* Spanish regions contains the regions of Aragon, La Rioja, Comunidad Valenciana, Galicia, Castilla Leon and Canarias. A*verage Entrepreneurial* regions are represented by entrepreneurial environments, which are similar to the overall Spanish national averages. Finally, the group of *Lagging or Low Entrepreneurial* contains the rest of the regions Andalucía, Baleares, Cantabria, Murcia, Castilla La Mancha and Extremadura. These regions display lower income levels than the Spanish average, with high unemployment rates, especially amongst the youth, with economies primarily based on agriculture and a lower rate of innovative companies or patents. These regions also have lower shares of their workforce with higher education.

These Spanish regions are each seen to display different strengths and weaknesses, not only between the broad groupings but also within the broad groupings, in terms of their attitudes towards entrepreneurship, the industrial structure, their quality of governance, their knowledge and research base and the labour market skills, amongst others. These types of data are crucial for helping policymakers decide their priorities and optimal responses to their local challenges. Policymakers may decide to strengthen existing assets and areas of strength, or alternatively, they may decide to reduce weaknesses in certain key areas. However, the systemic approach championed by the REDI is that the strength of the regional entrepreneurial ecosystem is only as strong as its weakest link. Therefore, this holistic, systemic approach shines a spotlight on the critical areas for improvement, which, if appropriately tailored policy interventions are successful, will most improve the whole local entrepreneurial ecosystem. Indeed, the holistic REDI type of methodology reflects a general shift in entrepreneurship research, which increasingly emphasises the multidimensional nature of entrepreneurship and increasingly involves research that is both quantitative and qualitative and at the intersections between different methodologies. This broad methodological basis also provides for much richer ways of contemporary thinking about entrepreneurship policies than previously.

3 Entrepreneurship policy

Entrepreneurship policy is a concept and a phrase whose time seems to have come. Although it was rarely used in the past, it has begun to achieve importance, particularly in Europe. Nevertheless, entrepreneurship policy has evolved gradually in industrial policy, as modern thinking about these issues has evolved (previous reviews can be found in Gilbert et al. 2004; Stenberg 2009; Thurik et al. 2013). From the 1980s onwards, traditional industrial policy, which at times had a protectionist flavour to it, increasingly aimed to promote competition while balancing the

Table 2 Policy orientation differences between managed economy and entrepreneurial economy

Managed economy	Entrepreneurial economy
Regulation (antitrust, competition policy, regulation and public ownership)	*Stimulation*
Regulate or constrain the activities of the existing large, powerful corporations and to provide protection for workers	Shift towards more knowledge-based activities and industries by creating a stimulating environment that supports the activities of newer and smaller firms
Targeting output (creating higher demand for existing products)	*Targeting input (mainly knowledge-based inputs)*
Realising specific outputs for known markets to maintain a comparative advantage. Picking winners—selected industries or firms were targeted and supported as national priorities	Growth policies are targeted at creating inputs for value creation, especially the creation and commercialisation of new knowledge and its externalities as a source of competitive advantage for new firms
National policy	*Local policy*
Motivated by the desire to prevent special interests from having undue influence on the national economic agenda	Policy initiatives developed at the local levels influenced by the local conditions and needs that should result in policies that better support the creation and exploitation of opportunities
Low-risk capital	*Risk capital*
Easy liquidity to existing companies with investment in tangible assets	Venture capital, private equity, startups finance, angel capital

Source: adaptation based on Acs et al. 2005; Audretsch and Thurik 2001, 2004; Eliasson and Eliasson 1996; Herdenson 2002; Minniti 2008; Murdock 2012; Verheul et al. 2001)

interests of the market and producers via regulatory measures. However, the entrepreneurial sector remained largely excluded from this arena (Minniti 2008). As the economy shifted towards a more knowledge-based and service-oriented composition, the smaller and more flexible entrepreneurial firms gained new importance (Audretsch and Thurik 2001 and 2004). Since the 1990s, industrial policies have therefore undergone a radical change. As a result, a new set of interventions designed to promote entrepreneurial activities have emerged, focussing on improving the business environment for risk-taking (Link 2007; Lundstrom and Stevenson 2001, 2005; Minniti 2008). The types of intervention priorities associated with new entrepreneurship policies are outlined in Table 2 and, in each case, are compared with the respective managed economy priorities in traditional pre-1990s industrial policies.

Yet, entrepreneurship ventures are not the same as small businesses. Even within the possible portfolio of new industrial policies, entrepreneurship policy is quite distinct from small business policy or innovation policy. More specifically, entrepreneurship policy tries to encourage entrepreneurs to rearrange economic resources into what they perceive will have more valuable and more productive uses to contribute to a more dynamic, creative and growing economy (Baumol 1990). The result is that nowadays, various areas of innovation policy in many countries are increasingly moving their emphasis away from the support of SMEs towards the support of entrepreneurship (Henrekson and Stenkula 2009). Entrepreneurship policy tries to

foster a socially optimal level of business venturing by raising the level of entrepreneurship both amongst actual entrepreneurs and amongst the 'nascent' entrepreneurs who are seriously considering starting a firm (Reynolds et al. 2000). However, the notion that entrepreneurship and business venturing should be an explicit focus of policy design, choice, and implementation (McCann and Ortega-Argilés 2016a, b) is a relatively recent policy development, termed 'the entrepreneurial turn' (Cox and Rigby 2012).

Fundamentally, entrepreneurship policy should be aimed at solving market and systemic failures, and most of the entrepreneurial market failure theories centre on correcting for informational asymmetries and externalities (Tuszynski and Stansel 2018). Informational asymmetries can result in adverse selection, which disincentives risk-taking, while the existence of positive externalities means that entrepreneurs cannot capture the full benefits generated by their risk-taking. Entrepreneurship policy scholars appear to have broadly reached a consensus that these sources of market failure are a pervasive phenomenon, thereby underpinning the case for government intervention in areas such as venture capital markets, knowledge, commercialisation, R&D and skill-upgrading efforts, and clustering (Audretsch et al. 2007).

Entrepreneurial policies have often been classified as either 'hard' or 'soft' (Storey 2005). *Hard policies* usually assist in the form of finance (loans and grants). At the same time, *soft measures* include counselling activities to entrepreneurs before business startup, counselling at the startup phase, facilitating financial assistance, enhancing technology and access to technology, and improving access to physical infrastructure or advice after the start.

As seen in Table 3, the entrepreneurship policy results from a series of policy interventions to solve market failure situations mainly around information and coordination externalities. In order to tackle these information or knowledge externalities, entrepreneurship policy interventions increasingly centre on the rewarding of entrepreneurs who discover new domains and the provision of incentives for non-traditional sectors, such as prizes for inventions, fiscal incentives or innovation vouchers. Other standard policy initiatives include creating platforms and mechanisms for facilitating intra-regional and interregional interactions, creating SME support organisations, demonstration projects, technology extension services, cluster creation programmes or technology banks. These initiatives have in common the need to coordinate the use of knowledge-related investments between knowledge-related actors and their associated decision-making processes.

Even if increasing in popularity, entrepreneurship policy has also been criticised as becoming excessively biased towards high-growth or high-tech focused, and accused of being impossible to replicate elsewhere (Parker 2007; Shane 2009).

In some cases, entrepreneurship policy focuses on actors that need relatively more stimulation or support for business venturing, such as female, migrant or senior entrepreneurs, to support a broader inclusive economic growth agenda (Dutz et al. 2000). Entrepreneurship policy is also sometimes targeted at improving enterprise rates in disadvantaged areas with low rates of entrepreneurship and groups underrepresented in business ownership (Dutz et al. 2000). These targeted policies involve a range of 'soft' interventions aimed at facilitating access to essential business

Table 3 Entrepreneurship Policy: market failures and policy interventions

	Market failure	Policy intervention	Example of existing and new policies/initiatives
Information externalities	Low "self-discovery" activity Low information exchange flows Lack of intra-and interregional interactions that restrict the knowledge spillovers	Incentives to reward entrepreneurs who discover new domains Incentives to involve non-traditional actors Creation of platforms and mechanisms to facilitate—intra and interregional interactions Public policies can assist further this process by providing key infrastructures (e.g. information about emerging technologies and commercial opportunities and constraints, product and process safety standards for domestic and export markets, and external sources of finance)	Prizes for inventions and discoveries, fiscal incentives, IPRs Incentives for public sector innovation (e.g. public procurement) Public web consultations Regional workshops Innovation vouchers Internationalisation support services
Coordination externalities	Low "self-discovery" activity due to the high fixed costs and large-scale investments required by some projects Prevention of emerging trends for regional economic growth	Coordination of investments and decisions of different entrepreneurs Coordination amongst many economic agents (through value chain suppliers, producers, users, specialised services, banks, basic research and training institutions) Support to technologies which have scale or agglomeration economies	Cluster policies Technology banks Public–private partnerships Innovation-oriented procurement Sectoral and Technology platforms SME support organisations Demonstration projects, technology extension services

Source: own elaboration adapted from OECD (2013) and Rodrik (2014)

services and required inputs for targeted entrepreneurial ventures. Table 4 provides examples of these policy interventions that enhance entrepreneurship amongst disadvantaged people and places.

4 Case studies of entrepreneurship policy

It is possible to get a good sense of how entrepreneurship policies are being developed and delivered by looking at the US and the European Union cases. In the US, policymakers alone have devoted billions of dollars to targeted entrepreneurship policies over the past half-century (Lucas et al. 2018). Yet the context in which this takes place is fundamentally shaped by three initiatives, namely the Bayh-Dole Act (1980), the Small Business Innovation Research Programme (SBIR) (1982), the State Small Business Credit Initiative (SSBCI)—Small Business Jobs Act (2010).

The 1980 Bayh–Dole Act authorises the Department of Commerce to create standard patent rights clauses to be included in federal funding agreements with non-profit organisations, including universities and small businesses (Mowery 2005). The key change over the previous set-up introduced by Bayh–Dole concerned the ownership of inventions made with federal funding. Before the US Bayh–Dole Act, federal research funding contracts and grants obligated inventors wherever they worked to assign inventions and intellectual property they made using federal funding to the federal government, whereas the Bayh–Dole permits a university, small business, or non-profit institution to elect to pursue ownership of an invention in preference to the government. As a result, the Bayh-Dole Act significantly increased the incentives for universities, small business and non-profit institutions to engage in research which commercial potential.

Soon after, in 1982, the US Small Business Innovation Research Programme (SBIR)[1] was established by the US Small Business Innovation Development Act of 1982 (Public Law 97–219). The SBIR programme mandate, as stated in the 1982 Act, was to: (1) promote technological innovation; (2) enhance the commercialisation of new ideas emanating from scientific research; (3) increase the role of small business in meeting the needs of federal research and development; and (4) foster and encourage participation by minority and disadvantage persons in innovative activity.[2] Each government agency with an SBIR programme is currently required to set aside and allocate 3.2 per cent of its extramural research budget to US small firms with less than 500 employees.

The US State Small Business Credit Initiative (SSBCI) was created via the Small Business Jobs Act of 2010.[3] This initiative funded by the US government with $1.5

[1] https://www.sbir.gov/about/about-sbir

[2] When the 1982 Act was reauthorized in 1992 through the Small Business Research and Development Enactment Act (Public Law 102–564), the language of purpose (4) was modified and broadened to focus on women as well as disadvantaged persons: "to provide for enhanced outreach efforts to increase the participation of socially and economically disadvantaged small business concerns, and the participation of small businesses that are 51 percent owned and controlled by women" (Audretsch et al. 2019).

[3] https://www.treasury.gov/resource-center/sb-programs/Pages/ssbci.aspx

Table 4 Targeted entrepreneurship policy initiatives

Female entrepreneurship	High-growth entrepreneurship	Social entrepreneurship
Provision of child-care services, generous family leaves	Providing finance	Place-based policies
Expanding social capital (entrepreneurial mentoring programmes, business network programmes), entrepreneurial prizes	For example, public–private microfinance and credit loan guarantee schemes	Places with higher level of socio-economic development are better positioned to seek to develop social ventures
Promotion of equal rights	Business angel networks, public–private venture capital, and initial public offerings	Education, training and network schemes Incubators, growth accelerators, public procurement policies
Elimination of discriminatory processes	Changes in labour regulation to reallocate jobs towards high-growth firms	Reduced regulatory burdens
	Entrepreneurial ecosystem conditions	

Source: based on Terjensen et al. (2016)

billion to strengthen state programmes that support the financing of small businesses in places. The US Treasury awarded funding to all but three US states and Territories and municipalities in 3 states, based on their proportion of unemployed persons as a percentage of the national total. Participating States were required to fund new or existing state programmes under the categories: Capital Access Programme (CAP), Collateral Support Programme, Loan Guarantee Programme, Loan Participation Programme, or Venture Capital Programme. In terms of investment returns, the broad remit of the policy was that actions should be initiated where states and territories had a reasonable expectation of a tenfold leveraging of new business financing.

These various initiatives have changed the overall US entrepreneurial climate. Evaluations of the SBIR programme have been broadly positive (Cooper 2003; Wessner 2008; Audretsch et al. 2019), in that it has facilitated entrepreneurship, innovation and employment growth and contributed to the economic performance of cities, states and regions. In particular, firms in receipt of SBIR funding tend to exhibit more innovative activity and stronger growth and survival. Recently, Audretsch et al. (2019) show that the impact of the SBIR programme goes beyond simply providing financial resources for R&D to entrepreneurs and small firms, in that the programme has significantly contributed to strengthening the relationships between the private sector and the academic sector. In contrast, recent US State Small Business Credit Initiative evaluations tend to show rather mixed results regarding their public venture capital programmes (Brander et al. 2015; Tuszynski and Stansel 2018). However, given that new technology innovations often take at least a decade to be developed, it may be that it is still too early to identify the effectiveness of this policy.

In the case of the European Union policy, entrepreneurship as a policy priority began to seriously emerge as part of the Lisbon Agenda (European Council 2000), while the links between entrepreneurship and regional development policy were articulated in the reforms to EU Cohesion Policy 2013–2020, as part of the Europe 2020 agenda. The Entrepreneurship 2020 Action Plan was devised. New financial instruments JEREMIE and JESSICA were articulated through the European Investment Bank, and the 'smart specialisation' agenda, which is a central plank of the reforms, was enshrined in the EU Cohesion Policy programming regulations.

The Entrepreneurship 2020 Action Plan (European Economic and Social Committee 2020) is built on three main pillars, namely: entrepreneurial education and training; strengthening framework conditions for entrepreneurs by removing the existing structural barriers and supporting them at different stages of their business lifecycle; dynamising the culture of entrepreneurship in Europe by nurturing the new generation of entrepreneurs, including reaching out to specific groups whose entrepreneurial potential is not being tapped to its fullest extent. In the case of entrepreneurship and regional development, all entrepreneurship and SME-related actions and interventions arising specifically from Cohesion Policy operate under the Thematic Objective of the Cohesion Policy Operational Programmes 2014–2020 "Enhancing the Competitiveness of Small and Medium Enterprises (SMEs)".

The place-based logic underlying the EU smart specialisation policy prioritisation framework (Foray et al. 2015; McCann and Ortega-Argilés 2015) and how it

fits into the reforms of EU Cohesion Policy (Barca et al. 2012) have been discussed in detail elsewhere (McCann and Ortega-Argilés 2016a,b). These reforms were the result of a series of publications in 2009 and 2010 about regional development policy intervention by the World Bank (2009), the European Commission (Barca 2009), the OECD (2019a; b), the Corporación Andina de Fomento (CAF 2010) and Sapir et al. (2004) report. These reports called for a change and adaptation of development policies due to significant changes in cities and regional performance as a result of the divergent effect of globalisation, bringing back the importance of aspects such as human capital and innovation (endogenous growth theories), agglomeration and distance (new economic geography), and institutions (institutional economics) and, in sum, the role of space. Globalisation has made localities and their interaction more important for their economic growth and prosperity (Garcilazo et al. 2010; Rodríguez-Pose 2011); therefore, place-based and place-sensitive approaches are argued to be the way forward to adapt places to their new realities (Iammarino et al. 2019). Place-based policies also called for an essential role of policy adaptation and experimentation (Rodrik et al. 2014). For our purposes, what is important is that enhancing entrepreneurial search and entrepreneurial discovery processes (Hausmann and Rodrik 2003) are central to the smart specialisation approach (Szerb et al. 2020).

Smart Specialisation provides a collection of tools and concepts to help regions identify relevant domains at the right level of granularity and implement an action plan within each domain (Foray et al. 2015; McCann and Ortega-Argilés 2016b). Many of these processes are based on upgrading the value chain of activities embedded in the region by diversifying in technological related sectors and strengthening the regional capabilities while boosting innovation-led growth (McCann and Ortega-Argilés 2015). Importantly, Smart Specialisation links closely to the wider developments in entrepreneurship policy being advocated in many countries. In recent years, major contributions to the agenda have been made around the role of regional branching (Boschma and Gianelle 2014), as well as the development of indicators to evaluate the smart specialisation agenda (Boschma 2017; Colombelli et al. 2014; Montresor and Quatraro 2017; Santoalha 2019). Smart Specialisation has been described as a check-and-update, test-and-recast exercise, with a clear emphasis on monitoring and evaluation (Kyriakou 2017; McCann and Ortega-Argilés 2013a, 2013b) and the early evidence suggests that the results are very promising in many regions, including regions with low to medium levels of prosperity. In contrast, the weakest regions with poor governance and institutional arrangements may struggle to realise any benefits from the policy.

Smart Specialisation has also been subject to critique in recent years and similar to the SBIR US programme, has not been seen to deliver its expected results yet (Gianelle et al. 2020); however, it can be conducive to promoting sustainability and industrial resilience (Crescenzi et al. 2020; Montresor and Quatraro 2020; Szerb et al. 2020). Gianelle et al. (2020) examined evidence based on 39 regional and national Smart Specialisation strategies in Italy and Poland, and 285 calls for proposals published in the period 2014–16 in Poland, Italy, Portugal, Czechia, Hungary, Lithuania and Slovenia, and the analysis sheds light on whether and how the Smart Specialisation approach has been translated into strategic decisions and policy interventions. The research finds that the regions examined tend to identify large

sets of narrowly defined priorities, contradicting the Smart Specialisation principle of prioritisation. Moreover, while most interventions contain specific priority-alignment mechanisms, they are not generally customised to the need and specificities of each priority area as a result of lobbying activities, higher political returns from public support measures, policymakers' risk-averse attitudes and a lack of capacity. However, it may also suggest that Cohesion Policy legislation has embedded an ill-defined incentive structure, which did not support the intervention logic of Smart Specialisation.

The US and EU cases discussed here illustrate the comparison in the evolution and the approaches to entrepreneurship policy in different geographical and administrative contexts. To begin with, both geographies and administrative and governance arrangements are significantly different. The US is composed of 50 federal states that constitutionally have authority over broad parts delivering socio-economic services; in contrast, the EU is composed only of 28 member states that differ markedly in terms of their governance and institutional systems, ranging from large federal or quasi-federal states (Germany and Spain) to large centralised states (UK and Poland), through to small centralised states (Estonia and Ireland) along with small decentralised states (Austria). Furthermore, the US has a much longer tradition of designing and implementing national entrepreneurship and SMEs initiatives. In contrast, the EU has only started to implement entrepreneurial strategies coherently across the EU member states since a few decades ago.

Moreover, US initiatives tend to be based on top-down approaches in terms of their design, helped by a state-based implementation; in the case of EU initiatives, an explicit fragmentation due to its multi-level governance system (EU-national-regional and local) seems to facilitate a bottom-up approach to entrepreneurship initiatives from its design to its execution. Finally, as pointed out by other authors (Stough et al. 2018), while the US does not have a long history of government experimentation, the EU has been characterised by implementing new and innovative initiatives at the sub-national, national and supra-national governmental levels.

As we survey the entrepreneurship literature in the context of regions and local economic development policy, we see that in recent decades, there has been something of shift away from a focus on the entrepreneurial dynamics of primarily successful regions, and towards the challenges associated with economically weaker regions. From the late 1980s onwards, modern thinking about entrepreneurship and regions took great inspiration from the experiences of dynamic and prosperous regions in places such as Silicon Valley, Route 128 Boston, Cambridge, England, Sophia-Antipolis, France, Emilia-Romagna in Italy, and North Brabant in The Netherlands. These places were both driving the development of, and also the exploitation of, the new generations of information and communications technologies, which were transforming the global economy. Interest in new modes of financing, such as angel investors and venture capitalists, along with observations of fast-growing and scale-up companies, heavily influenced the research agenda, as did insights about university-industry spillovers and the formation of allied clusters. However, in the years following the 2008 global financial crisis, entrepreneurship research increasingly started to ask questions about other types of places; either those which have suffered adverse shocks or those which had failed to generate steady growth over

recent years. This raises the fundamental conceptual and observational question of the extent to which these types of approaches to entrepreneurship and place, which we so heavily influenced by the experiences of dynamic and prosperous places, are also fit for purpose when discussing economically weaker and more vulnerable regions. At this stage, the evidence from the different policy settings reviewed here suggests that to some extent, the jury is still out. The US and EU experiences have shown some progress and success in this regard, although this is rather patchy, and it may be the case that such policy frameworks are only realistically effective, above certain thresholds of development at the local or regional level. At present, entrepreneurship theory has little to say on these matters, and progress in the field is largely reliant on inferences from observations. In this regard, the weaker link approach of the REDI breaks new ground, turning on its head many of the approaches which emphasised strengths, whereas a system-wide framing of the problems emphasises the correcting for weaknesses as being essential.

5 Conclusions

Over more than thirty years of development, both entrepreneurship studies and entrepreneurship policy have gradually and increasingly acknowledged the role of the local and regional context. Nowadays, there is an increasing shift in many different countries towards a greater place-based understanding of entrepreneurship and a greater place-based emphasis on entrepreneurship policy. In turn, the regional development field has increasingly acknowledged the crucial role of entrepreneurship as a growth driver and has increasingly initiated policies to promote local entrepreneurship. Both literatures have become increasingly intertwined and nowadays share many common concepts and analytical frameworks, including the systems perspectives. Economic agents and institutions interact amongst themselves and with their environment, and these interactions explain differential local economic performances (Acs et al. 2017). As part of these shifts, a mix of hard and soft policy interventions is becoming increasingly common and promoting entrepreneurship has become a significant element of regional policy in many places. Nevertheless, limitations in the implementation of regional entrepreneurship policies can still be found in addressing important disparities between places and new environments and the importance of evaluation. For example, the EE perspective is still largely untested outside of the large urban Global North (Spigel 2018; Tsvetkova et al. 2020 offer some of them) or in a digital context (Kenney and Zysman 2016; Nambisan et al. 2017; Cusumano et al. 2019; Goldfarb and Tucker 2019; Elia et al. 2020) and there are still limited attempts for entrepreneurship sub-national policy evaluation and optimisation (Szerb et al. 2020; Varga et al. 2020). As seen in this paper, our understanding of these evolving approaches has increased significantly in recent years, but probably more so than our understanding of their effectiveness. Weakest link approaches offer a new framing of the problems associated with entrepreneurship, both conceptually and in terms of policy implementation. Research on these topics is an ongoing and unfinished process which is likely to continue well into the future. In particular, there is a need to better understand what role 'place' plays in shaping

entrepreneurial activities and effective policy approaches, especially in non-superstar cities and regions. The challenges of fostering entrepreneurship in economically weak places are much greater both conceptually and operationally than in already prosperous places.

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