

Chapter 2

Innovation, Entrepreneurship and the Complementary Skill Structure

Abstract This chapter provides a theoretical foundation to help identify the areas where the need for reform is the greatest. The theories of the experimentally organized economy and of entrepreneurial ecosystems are used to identify six competencies, in addition to that of the entrepreneur, that are necessary for ideas to be generated, identified, selected and commercialized. The competencies are those of inventors, professional managers, competent employees, venture capitalists, actors in secondary markets, and demanding customers. Importantly, no one is in charge of the ecosystem's skill structure, which limits what can be achieved through top-down reform. We also draw on the varieties of capitalism literature, which identifies institutional complementarities as an important driver of the persistent institutional differences across polities. The existence of institutional complementarities implies that viable policy changes must be compatible with existing institutional patterns and that a specific change will have effects that extend throughout the institutional system. As such, they help explain both grid-locks and cascading changes.

Keywords Coordinated market economy · Entrepreneurial ecosystem · Experimentally organized economy · Institutional complementarity · Liberal market economy · Skill structure · Varieties of capitalism

Since Joseph Schumpeter's (1934) seminal work, the view that an economy's long-term growth depends on its ability to exploit innovations has become commonplace (Cohen 2010). Creating these innovations is typically seen as the role of the entrepreneur, whom Schumpeter came to view as the *primus motor* of economic growth. However, entrepreneurs do not operate alone or in a vacuum; they depend on a broader entrepreneurial ecosystem: a skill structure consisting of an array of actors with complementary skills and resources to realize their ideas (Johansson 2009). Furthermore, all actors in the ecosystem's skill structure are constrained and enabled by their institutional environment (Aldrich 2011; Estrin et al. 2013). In this chapter, we present our definition of entrepreneurship and consider how it differs across Europe. We then present the skill structure's other actors, who are necessary to reap the full benefits of innovations and their subsequent commercialization. Lastly, we will discuss the VoC perspective and what it entails for the remainder of our analysis.

2.1 Entrepreneurship in Europe—A First Glance

Today, the importance of entrepreneurship is generally undisputed (Lazear 2005; Baumol 2010; Carree and Thurik 2010), but its definition and measurement remain topics of considerable debate. While an economy's self-employment rate, startup rate or business ownership rate are frequently used as empirical measures of its aggregate entrepreneurial activity, most small and new businesses are best characterized as permanently small. They seldom have any ambition to grow and should not be mistaken for nascent entrepreneurial firms (Hurst and Pugsley 2011; Nightingale and Coad 2014). Researchers increasingly emphasize the need to focus on measures that adequately capture innovative and growth-oriented entrepreneurship (Shane 2009; Stam et al. 2012; Henrekson and Sanandaji 2014). They also focus on the distinction between opportunity and necessity entrepreneurship—that is, whether one becomes an entrepreneur because of a potent business idea or for other reasons, such as a lack of a better means to earn a living (Vivarelli 2013). What matters are the *qualitative* aspects of entrepreneurship, and empirical evidence suggests that an economy that fosters (a few) high-growth firms and high-impact entrepreneurial firms grows faster than an economy that tries to maximize the number of Small and Medium-sized Enterprises (SMEs) or the self-employment rate (Shane 2008; Henrekson and Sanandaji 2014).

We adopt a definition of entrepreneurship that is geared towards making it essential to innovation and economic growth. In line with Henrekson and Stenkula (2016) and closely related to Wennekers and Thurik (1999), we define entrepreneurship as the ability and willingness of individuals, both independently and within organizations,

- to discover and create new economic opportunities;
- to introduce their ideas into the market under uncertainty, making decisions regarding the location, product design, use of resources and reward systems; and
- to create value, which often, though not always, means that the entrepreneur aims to expand the firm to its full potential.¹

A good first approximation of the prevalence of this type (or possibly these types) of entrepreneurship in Europe is provided by two measures from the annual Global Entrepreneurship Monitor (GEM) surveys. The first measure, *high-growth expectation early-stage entrepreneurship*, is the percentage of an economy's total

¹This is not to deny that there are motives other than monetary gain to become an entrepreneur. Many entrepreneurs have an intrinsic desire to produce a valued good or service and to outcompete other entrepreneurs (Baumol 2002; Manish and Sutter 2016). However, the pursuit of economic gain has a central function even in this case as the accumulation of net assets is a necessary means for an entrepreneur who wants to expand and attain a leading position in the marketplace. It also serves as the yardstick for comparing how successful one's business is relative to others.

entrepreneurial activity (TEA)² in which the entrepreneur expects to grow to employ at least five employees within five years. The second measure, *improvement-driven opportunity entrepreneurship*, is the percentage of those involved in TEA (i) who claim to be driven by opportunity as opposed to finding no other option for work, and (ii) who indicate that their chief motives for becoming involved in this opportunity are gaining independence or increasing their income rather than just maintaining it.

Table 2.1 presents the correlation between these measures, the Union's innovation index and PPP-adjusted GDP per capita for the 23 EU member states for which there are data for 2014. High-growth expectation early-stage entrepreneurship is the only measure not to have a strong positive correlation with the others; it is virtually uncorrelated with improvement-driven opportunity entrepreneurship and negatively correlated with innovation and GDP per capita.³

Although high-growth expectation early-stage entrepreneurship fails to exhibit a positive correlation with innovation and GDP per capita, it may still be important for countries at a lower level of economic development.⁴ Figure 2.1 presents the average *country scores* for the two GEM measures over the period 2010–2014. As a point of comparison, we include numbers for the United States, which is noteworthy for its high scores on both measures. While some EU countries, such as the Czech Republic and Slovenia, also score highly on both measures, the correlation is nonexistent in this sample as well ($r = -0.085$). Some countries, such as Poland, Greece and Spain, score low on both measures, while others have a high score on one measure but a low score on the other. This scatterplot suggests that the way in which entrepreneurship manifests itself differs considerably across European countries.

²TEA is defined as the proportion of working-age adults (18–64) in the population who either are involved in the process of founding a firm or are active owner-managers of firms that are less than 3.5 years old.

³If high-growth expectation early-stage entrepreneurship and improvement-driven opportunity entrepreneurship are instead calculated as a share of the population, the positive correlation between improvement-driven opportunity entrepreneurship and innovation as well as between improvement-driven opportunity entrepreneurship and GDP per capita disappears. There is now also a strong positive correlation between the two entrepreneurship measures. This underscores that analyses of empirical measures of entrepreneurship should be conducted with caution since the specific measure of entrepreneurship used might substantially influence the analysis. However, we deem that focusing on the share of TEA that is growth-oriented and improvement-driven is more relevant in our case since the total TEA in each country differs depending on a number of historical and structural factors.

⁴However, an entrepreneur's assertion that (s)he expects to employ at least five employees does not mean that these plans will be realized. Another relevant measure of entrepreneurship could therefore focus on the prevalence of startups that actually have expanded and hired people. Research has shown that so-called gazelles, i.e., new firms with a high growth rate, are important for economic development (see, e.g., Henrekson and Johansson 2010; Haltiwanger et al. 2013; Coad et al. 2014).

Table 2.1 The correlation between per capita income, innovativeness and the two GEM measures of entrepreneurship

	Innovation index	GDP per capita	High-growth expec. early-stage e-ship	Improvement-driven opportunity e-ship
Innovation index	1.00			
GDP per capita	0.80 ^b	1.00		
High-growth expectation early-stage e-ship	-0.40 ^a	-0.36 ^a	1.00	
Improvement-driven opportunity e-ship	0.51 ^b	0.42 ^a	-0.09	1.00

Note The innovation index is defined by the European Innovation Scoreboard; GDP per capita is in current PPP dollars for 2015. ^b and ^a denote statistical significance at the 1 and 5% level, respectively

Source Eurostat and Global Entrepreneurship Monitor

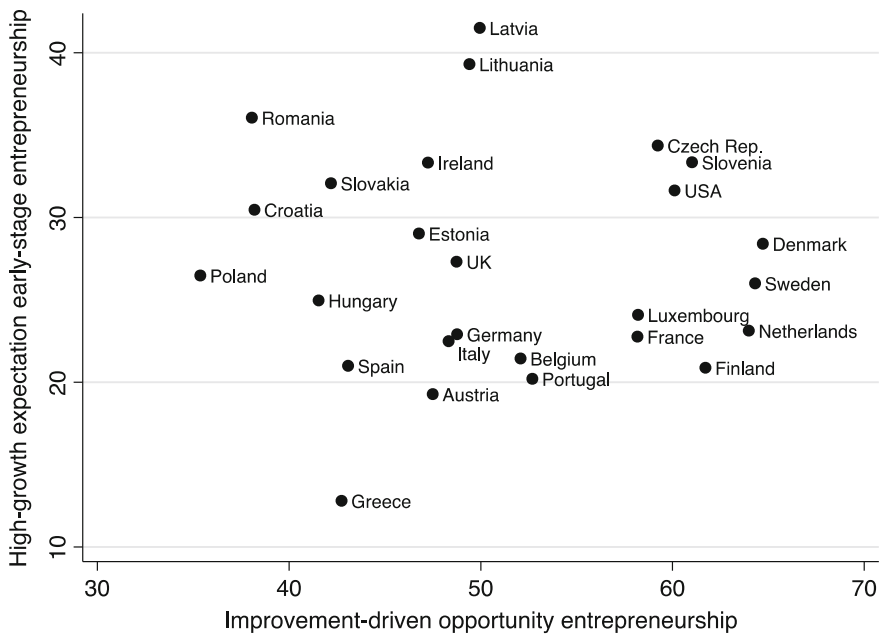


Fig. 2.1 Improvement-driven opportunity and high-growth expectation early-stage entrepreneurship in European countries and the United States, 2010–2014. *Note* Defined as the percentage of all entrepreneurs (TEA) that claim to qualify for either or both types of entrepreneurship. *Source* Global Entrepreneurship Monitor

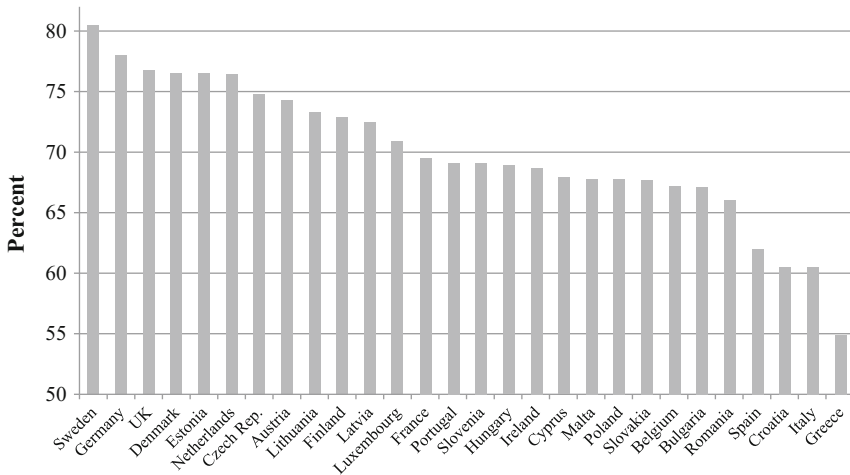


Fig. 2.2 Employment share in 2015 among people aged 20–64 in EU countries. *Note* There are no data for the U.S. for the 20–64-year olds. However, in the OECD data, which reports employment rates for 15–64-year olds, the U.S. employment rate was 68.7% in 2015, compared to 75.5% in top-ranked Sweden and 50.8% in Greece, which has the lowest employment rate among 15–64-year olds. *Source* OECD

As an additional illustration of the differences in starting conditions, Fig. 2.2 shows the large EU cross-country variation in the need for job creation, captured by the employment rate; it varies from 55% in Greece to approximately 80% in Sweden. Furthermore, we see that the rate of high-growth expectation early-stage entrepreneurship is high in several countries with low levels of aggregate employment (Greece is an exception, scoring low on both entrepreneurship measures and employment). Thus, the good news is that there are many entrepreneurs who aim for high growth in these countries; the bad news is that this is insufficient to close the employment gap vis-a-vis other countries with high employment rates.

For countries with low employment rates, notably the three Mediterranean countries, more necessity entrepreneurship is needed to create jobs in the formal sector. Additionally, these member countries can (and do) compensate to some extent for their lower employment rates by having larger shadow (or underground) economies (Schneider 2015; see Appendix Fig. A.2). In Bulgaria and Romania, the shadow economy is estimated to be approximately 30% of official GDP, while the proportion is less than half that in the Northern European countries. However, activity in the shadow economy is generally a poor substitute for activity in the formal sector, partly because it creates unfair competition with firms that do adhere to rules and regulations. More importantly, firms in the shadow economy cannot benefit from the division of labor and specialization to the same extent as formal firms. They are therefore unlikely to grow beyond a small size. Foremost, they should be considered a means of poverty alleviation (La Porta and Shleifer 2008) and a treatment of symptoms rather than a cure for an ailing institutional framework.

2.2 The Entrepreneurial Ecosystem: The Requisite Complementary Skill Structure

Recent discussions in the scientific literature of entrepreneurial ecosystems (Stam 2015; Autio 2016) will remind Swedish readers of the theory of the experimentally organized economy (EOE) and competence blocs, which are most closely associated with the writings of Eliasson (1996); see Johansson (2009) for a synthesis. This theory shares many features with the theory of entrepreneurial ecosystems, particularly the notion that the entrepreneur does not act in a vacuum. For our purposes, it is beneficial to approach this “ecosystem” from the EOE perspective, which considers the economic problem to be one of coordination in the vein of Hayek (1945). While the Schumpeterian entrepreneur is the main actor, who creates and expands businesses by identifying and exploiting new ideas, the success of these ideas depends crucially on an array of other actors/functions whose complementary competencies and inputs are necessary to create and use productive knowledge.

In addition to that of the entrepreneur, the EOE literature identifies at least six competencies that are necessary to generate, identify, select and commercialize ideas. These competencies exist and are deployed (to varying degrees) in virtually all market-based economies. This results in varying outcomes in terms of what type of entrepreneurial ecosystem is produced and ultimately what type of innovative output is realized. In our updated interpretation, the following actors and competencies constitute what we call the *skill structure* in a well-functioning entrepreneurial ecosystem:

- (i) *Inventors*. Entrepreneurs generally have a good overall understanding of how to exploit an opportunity, but they may lack highly specific knowledge regarding the relevant technologies. Inventors may create the foundation for a firm through an invention (patented or not) or work to solve specific problems.
- (ii) *Professional managers*. Professional managers are needed to take commercialization beyond the initial entrepreneurial phase and to organize the expansion of the original venture into a large-scale operation.
- (iii) *Competent employees*. Economic development and growth requires skilled specialists, production staff and front-line personnel. The functioning of the labor market and the educational system is crucial for supplying firms with workers with relevant skills.
- (iv) *Venture capitalists*. They are either business angels or venture capital firms who finance firms and entrepreneurs with “intelligent” capital in the early phases of development. They identify entrepreneurs and their projects, determine whether and how much to invest and decide how the investment should be valued. In this process, they also provide the firm with industry experience, valuable contacts and management skills.

- (v) *Actors in secondary markets.* They can be portfolio investors, buy-out firms, management buy-ins or wealthy industrialists who become controlling owners. Their skills and functions are similar to those of venture capitalists, but they operate later in a firm's lifecycle. They assess the value of firms, contribute capital and evaluate the competence of the owner(s) and management. They also help entrepreneurs and venture capitalists reduce or terminate their involvement as the firm moves into a more mature stage.
- (vi) *Demanding customers.* Consumption is the ultimate goal of production, and for growth to occur, the products produced must be what consumers demand. The most demanding consumers/clients function as particularly crucial sources of information regarding consumer needs and preferences. One important entrepreneurial skill is thus identifying and cooperating with the right customers.⁵

The ecosystem's skill structure is complete when it has acquired enough critical mass to attract competent actors to a sufficient degree to fulfill each function. A lack of requisite competencies or an important actor category may significantly impede or even prevent the entrepreneurial process from taking place. In a stylized manner, Fig. 2.3 attempts to capture the phases during which the various actors in the skill structure participate in the commercialization process, from the conception and development of an idea through commercialization to full-scale industrialization.

Certainly, the details of the commercialization process vary, and the same person can fulfill more than one role in the skill structure. Oftentimes, the process begins when the entrepreneur identifies a potential opportunity in interactions with demanding customers, which (s)he then strives to develop into an idea that can be commercialized. However, entrepreneurship may also involve creating something that customers have yet to imagine and are thus unable to demand. Additionally, while inventors are commonly involved in resolving technical problems, they can sometimes also initiate a process that is then further developed by the entrepreneur.

Generally, the early commercialization phase mainly involves entrepreneurs and, to a lesser extent, competent employees, while the business angels and venture capital firms finance development.⁶ In the scale-up phase, professional managers become involved, together with a greater number of competent employees, while actors in secondary markets assume responsibility for financing, which (depending on sector) might be substantial at this point. Moreover, actors can work alongside each other or overlap during different phases, and professional managers and actors in the secondary market can be involved at an earlier stage, while the entrepreneur may at times also assume the role of inventor or professional manager.

⁵In some industries, innovation is largely driven by the users (customers) rather than by firms. This user role is particularly common in industries that produce technical appliances and scientific instruments (see von Hippel et al. 2011).

⁶This does not exclude family, friends and maverick enthusiasts, but the focus here is on professional finance.

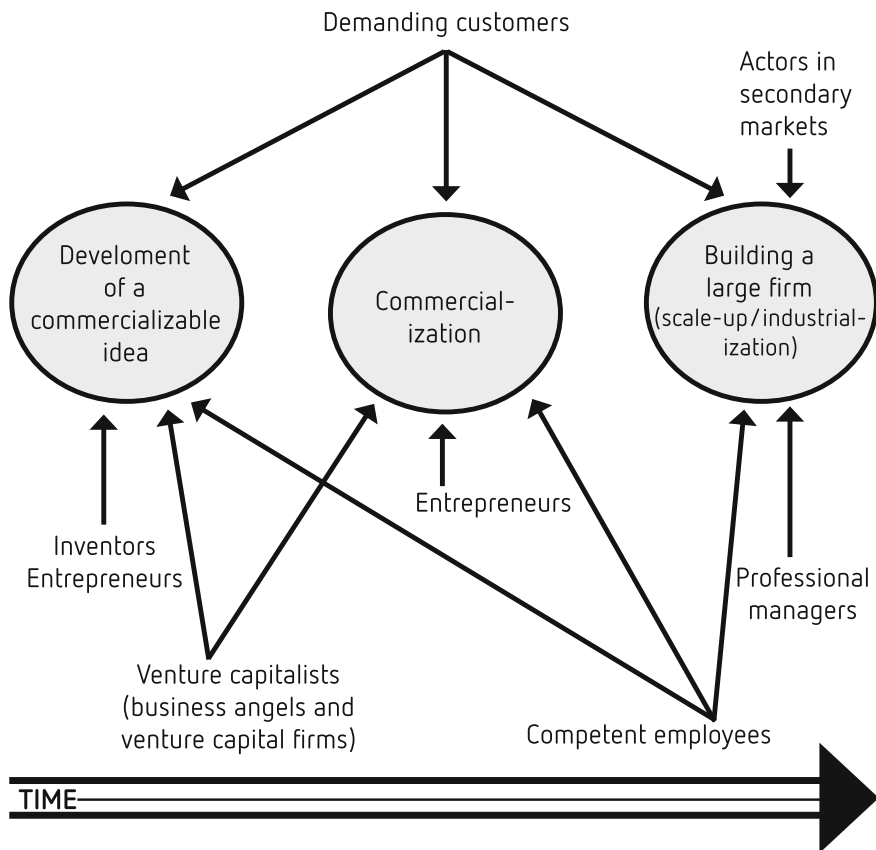


Fig. 2.3 The skill structure: from a concept to a large-scale firm. *Source* Adaptation from Eliasson (1996) and Henrekson and Johansson (2009)

The ecosystem’s skill structure is useful when tracing the institutional underpinnings of an entrepreneurial regime because the activities of its actors depend crucially on a society’s “rules of the game” (North 1990; Johansson 2009, p. 187). Some institutions are relevant to all actors. Obvious examples are the protection of private property rights, the rule of law and a high level of generalized trust. Other institutions are more competence-specific and mainly affect the broader entrepreneurial system through their effect on that competence. Venture capitalists, for example, obviously depend directly on the institutions underpinning finance and the venture capital industry, whereas the availability of competent employees depends more directly on the functioning of the labor market, the incentives for investing in human capital and the quality of the educational system.

The EOE perspective takes for granted that no specific agent in the ecosystem's skill structure is in charge; no one "owns it" or understands more than a fraction of its inner workings. This is also emphasized in the broader discussion of entrepreneurial ecosystems (Autio 2016) with the implication that no one necessarily feels responsible for ascertaining the efficient functioning of the ecosystem. Thus, traditional "top-down" policy approaches are unlikely to work well (Goldfarb and Henrekson 2003; Acs et al. 2014; Autio and Levie 2016) since they "build on the assumption that it is possible to identify clear-cut 'failures' in the functioning of a given market or an innovation system" and that such failures "can be fixed through top-down intervention" (Autio 2016, p. 22). The very lack of ownership of the entrepreneurial ecosystem means that there is no chain of command that can be applied, which is a central reason that a top-down "command-and-control" approach is unlikely to work or at least should be undertaken with great humility.⁷

In principle, entrepreneurship can be encouraged by efforts ranging from specific targeted support, such as technology assistance to small firms, to general macro policies aimed at maintaining a stable economic environment. Our definition of entrepreneurship in Sect. 2.1 precludes an entrepreneurship policy that is mainly focused on encouraging self-employment or small business activity, often referred to as SME policy. Moreover, as it is difficult—if not impossible—for policymakers to a priori determine who will become an entrepreneur (let alone a successful one), measures directed at a specific group (such as the unemployed) or a specific form of business (such as small or new firms) are largely misdirected (Holtz-Eakin 2000; Lerner 2009). If anything, such measures make for a complex system with detailed rules, exceptions and exceptions to the exceptions. They also result in increased administration and information costs that are almost always more burdensome for small and medium-sized firms (European Commission 2007, 2008). Furthermore, such programs invariably provide opportunities for unproductive and destructive entrepreneurship.

Since few (potential) innovations are Pareto superior, there have been important self-serving interests (such as guilds and unions) throughout history that stood to lose from the introduction of such innovations, usually because those interests owned specific assets dedicated to the state-of-the-art mode of production. An asset used in a highly specialized activity can rarely be reallocated to another activity without incurring substantial costs regardless of whether it consists of physical, human or intangible capital (Caballero 2007). Thus, the value of the asset is contingent on its continued use precisely in its specialized activity. To protect the value of their assets, special interests resort to using non-market means to block the market's selection process, including (notably) legal measures in the form of laws and regulations barring the innovation in question (Olson 1982; Bauer 1995; Mokyr 1998). Regardless of the efficiency of an institution, its beneficiaries thwart change

⁷This was already observed by Smith (1966/1759, pp. 342–343) who warned against succumbing to the temptation of thinking like a "man of the system", who thinks he can "arrange the different members of a great society with as much ease as the hand arranges the different pieces upon a chess-board".

to preserve their rents, causing it to become entrenched and non-adaptive over time (Etzioni 1985). To avoid having to fight the same battle time and time again, such interests may have built in an anti-innovation bias into the existing institutional structure.

Therefore, public policy should not try to influence the “natural” evolution of firm size, growth, or form through targeted subsidies or tax breaks. Instead, it should leave this evolution to market forces and profit motives.⁸ Policy should aim to support or develop an institutional system that encourages socially productive entrepreneurial activity irrespective of business form and enables the creation and commercialization of valuable knowledge (Acs and Szerb 2007; Braunerhjelm et al. 2010). Whether this implies a high or low rate of self-employment or of SMEs is largely irrelevant.

2.3 Diverse Capitalisms in the European Union

There is considerable institutional diversity even among advanced countries; the United States, Japan and European countries have markedly different models of capitalism, none of which can be declared a clear “winner” (Hall and Soskice 2001; Freeman 2002; Amable 2003). While top-down and bottom-up convergence has occurred in EU countries over the years, member states still differ substantially in their institutional organization, and this diversity is evident even among countries with similar levels of real income. Such differences among countries are not surprising given the documented importance of historical values and norms, lock-in effects and path dependence in institutional evolution (Arthur 1989; Reher 1998; Acemoglu et al. 2001; Nunn 2009; Galasso and Profeta 2011; Giuliano and Nunn 2013; Alesina et al. 2015).

This diversity is a common starting point in the various incarnations of the varieties of capitalism (VoC) literature, which is closely associated with the seminal work of Hall and Soskice (2001). In this literature, institutional complementarities are considered a main driver of the persistence of institutional differences across VoCs. Institutions are complementary if the presence or efficiency of one institution increases the returns from or efficiency of the other. Put simply, if we observe that institution X_A is working well in country A , we cannot assume that copying and then

⁸Some authors do admit a role for targeted support. Autio and Rannikko (2016) summarize collected insights, arguing that policy measures that are effective in supporting high-growth firms should be: (1) highly selective, requiring strong, verified growth ambition and some evidence of growth ability as an initial selection criteria; (2) progressive, tying continued support to progressively more demanding milestones that the selected companies should be required to obtain; (3) highly hands-on, emphasizing active, capacity-boosting measures rather than a passive provision of resources and general advice; (4) emphasize partnering with specialized private sector service providers to ensure relevance; (5) substantial enough to ensure meaningful chances of achieving tangible outcomes on growth. This list reveals the practical difficulties of getting targeted support to work efficiently.

substituting it for X_B in country B will yield similar results since the efficiency of any variation of the institution X depends on the workings of other institutions that differ across the two countries (say, Y_A and Y_B , and Z_A and Z_B), which in turn may be more or less amenable to reforms (e.g., depending on whether they are formal or informal).

Therefore, “[n]ations with a particular type of coordination in one sphere of the economy should tend to develop complementary practices in other spheres as well” (Hall and Soskice 2001, p. 18), and institutional practices will not be randomly distributed across nations. Rather, we should be able to observe country clustering in the dimensions that distinguish VoCs from one another. For our purposes, the existence of institutional complementarities implies that viable policy changes must be compatible with existing institutional patterns. Complementarity also implies that a specific change will have effects that extend throughout the institutional system. The fear of this type of snowballing can explain the existence of institutional inertia, as even piecemeal changes are blocked for fear that they may lead to major changes (Amable 2003, p. 7; Aoki 2001).⁹

The exact results from the application of the VoC perspective empirically depend on the number of dimensions considered. For example, Hall and Soskice (2001) emphasize a society’s approach to coordination as its key distinguishing feature, and therefore put the spotlight on institutions that facilitate coordination by enabling (i) the exchange of information, (ii) the monitoring of behavior and the (iii) sanctioning of defections from cooperation. This framework yields a core distinction between two types of political economies. In liberal market economies (LMEs), firms coordinate their activities primarily via firm hierarchies and competitive market arrangements. In coordinated market economies (CMEs), coordination relies more heavily on non-market relationships.

Subsequent researchers have taken more dimensions into account and offered more fine-grained contributions. For example, Amable (2003) examines how five spheres in the economy complement one another: wage-setting systems and labor markets, product market competition, finance and corporate governance, the welfare state and social protection, and the educational system. Using a combination of factor and cluster analyses, he thereby identifies five capitalist models: the market-based, the continental European, the social-democratic, the Mediterranean, and the Asian. Another closely related school is that of French regulation theory (Boyer 2005), which identifies four types of capitalism: market-oriented, meso-corporatist, state-driven, and social-democratic.

In a recent contribution, Dilli and Elert (2016) undertake an analysis with a scope similar to that of Amable (2003) but in which the main focus is on understanding the complementarities and features of the institutional structures underlying entrepreneurial regimes. They do a stepwise aggregation of data in an analysis covering 22 countries (19 EU-28 countries together with Norway, Switzerland and

⁹Typically, losses are also more salient and weigh more heavily on utility than gains (Kahneman and Tversky 1979), which in and of itself breeds resistance to change.

the United States as points of comparison) and apply a multitude of variables. A principal component analysis reveals three empirically relevant entrepreneurial dimensions across countries: necessity-based nascent entrepreneurship, opportunity entrepreneurship, and aspirational entrepreneurship. When these dimensions are included in a cluster analysis together with a number of theoretically and empirically relevant institutional features, countries cluster into no less than six different groups, each with a distinct bundle of entrepreneurial characteristics and institutional attributes.

The main implication of these approaches is that different reform strategies are appropriate to promote entrepreneurship and economic growth in European countries in different clusters. This will inform our own analysis addressing why and how European countries should undertake reforms to promote entrepreneurship and innovation. Although the general direction in which countries should move will be specified with respect to each area in Chap. 3, those paths can differ considerably depending on the initial economic and institutional conditions. Specifically, our contention is that not taking institutional complementarities into account is likely to breed reform failure. Furthermore, the VoC perspective helps us explain the non-random interconnectedness of various institutions, the persistence of institutional forms that are (seemingly) not conducive to entrepreneurship and growth, and thus the prospects for amending these institutions.

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