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Schumpeterian Entrepreneurship: Coveted by Policymakers but Impervious to Top-Down Policymaking

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Abstract: Differentiating various types of entrepreneurs provides clues to the puzzle of why vertical or top-down policies often fail to create Schumpeterian entrepreneurship and the ecosystems where it thrives. Schumpeterian entrepreneurship is intrinsically contrarian, whereas public policy has a bias toward incremental innovation and replication of past success. If central planners knew what the next radical innovation would be, there would be no need for Schumpeterian entrepreneurs. Schumpeterian entrepreneurs create not only companies but also institutions in the entrepreneurial support system. These ever-evolving structures are too complex to design, and central planning instead reduces the space for organic institutional innovation.

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1. Introduction

Arguably the most influential theoretical definition of entrepreneurship is the Schumpeterian definition, in which the entrepreneur is seen as the key agent involved in the creation of innovative and growth-oriented firms. The concept emanates from the Austrian economist Joseph Schumpeter, who—in his classical book *The Theory of Economic Development*, first published in German in 1911—singled out the entrepreneur as the *primus motor* of capitalism. The Schumpeterian view defines an entrepreneur as an innovator, as a driver of economic growth and as a trigger of technological development (Hébert and Link 2006; McCraw 2007).

When the term entrepreneurship is used in policy discussions, it can assume quite different meanings. At one end of the spectrum, there are policy proposals that would allegedly lead to a higher rate of startup activity in general, disregarding the quality and growth potential of the new firms. At the other end, there are proposals for policies that are said to produce, once implemented, new hotbeds of entrepreneurial activity and numerous Schumpeterian entrepreneurs, eventually resulting in firms that will become global leaders in their industry. An informed discussion of such policies is not possible unless one begins by making clear what characterizes Schumpeterian entrepreneurship and how it differs from other types of entrepreneurship such as high-impact entrepreneurship in general. The purpose of this paper is to discuss how the nature of Schumpeterian entrepreneurship makes it difficult to forge public policies that increase the supply of such entrepreneurship.

Examination of existing interventions suggests that public entrepreneurship policies often fail for reasons that are not fully understood (Lerner 2009; Hölzl 2010). Several researchers have highlighted the problems involved in attempting to formulate effective entrepreneurship policies. We distinguish explicitly between different types of policies to provide a more precise account of the problems facing Schumpeterian entrepreneurship policy design. Our main distinction is between *vertical* or top-down policies and *horizontal* or bottom-up policies. The former type consists of policy measures applied differentially across sectors of the economy and essentially target the economic output of specific industries, projects, and/or firms. By contrast, *horizontal* or bottom-up policies are applied across the board, thus affecting all sectors and firms irrespective of size, age, industry, and location.

We further discuss how successful institutions tend to self-evolve conditioned by past Schumpeterian entrepreneurship, with reference to the Hayekian perspective of knowledge in

markets, and how political failures such as regulatory capture make efficient policymaking even more difficult.

Illustrating the difficulty of crafting innovation policy, many countries have exerted enormous effort in trying to recreate the success of Silicon Valley through policy interventions, to be met with only scant success (Hospers, Desrochers, and Sautet 2008). Mason and Brown (2014) point out that the success of Silicon Valley gave rise to a global “industry” whereby policymakers in numerous countries tried to replicate the success in their home countries—almost invariably unsuccessfully. We argue that a major explanation of this failure is that Schumpeterian entrepreneurs are distinct not only from non-innovative and low-growth firms but also from firms engaged in routine innovative activity, such as expanding or improving a well-known technology. Since Schumpeterian entrepreneurship is, almost by definition, contrarian and thus unpredictable, the information problem facing a central government seeking to support this activity through policy is greater and qualitatively different from policymaking aimed at supporting other types of entrepreneurship. Given the government’s difficulties in accessing relevant information and the distortionary incentives created by the political process and policy measures for both market actors and policymakers, it is not surprising that many well-intentioned direct policies fail to achieve their declared goals and that more indirect, bottom-up policies have a greater chance of success.

The paper is organized as follows. In the next section, we present Schumpeter’s own definition of the entrepreneur and the entrepreneurial function. In the following section, we discuss institutional entrepreneurship. We first point out that Schumpeterian entrepreneurs alter the existing order by creating not only firms but also institutions. Then, we add the Hayekian view of institutional entrepreneurship and the use of knowledge in the market that entrepreneurs generate. In section 4, we call for the need to distinguish between not only policies aimed at low- versus high-impact firms but also firms whose high impact is based on replicative versus Schumpeterian innovations. In section 5, we survey and evaluate studies on the effectiveness of entrepreneurship and innovation policy programs. In section 6, we discuss how political failures impact the efficiency of policy programs and argue that the unpredictable and contrarian nature of Schumpeterian entrepreneurship, as well as the difficulties evolved in crafting policies in an environment of imperfect information and vested interests, makes it impervious to targeted policy measures but could benefit from horizontal or bottom-up policies that improve on the overall economic climate. Section 7 concludes.

2. The Schumpeterian view on entrepreneurship

The entrepreneur brings about change by disturbing the status quo and pushing the economy toward a new equilibrium. When successful, this generates entrepreneurial profits exceeding the risk-adjusted market rate of return. Schumpeter focused on novelty, innovation and disrupting existing equilibria in his definition of entrepreneurship, and he makes clear that entrepreneurial ability defined in the sense in which he uses the term is rare: “To act with confidence beyond the range of familiar beacons and to overcome that resistance requires aptitudes that are present in only a small fraction of the population and that define the entrepreneurial type” (Schumpeter 1942, p. 132). We define Schumpeterian firms as firms that bring an innovation to the market and have the ambition to grow. An innovation can consist of a new technology, but it can also be a new product, service, or organizational practice. The premise is that there are fundamental differences in the quality of firms and that a small proportion of all firms are high-quality firms that contribute most of the economic benefits associated with entrepreneurship.

Furthermore, Schumpeter discusses the economic function of the entrepreneur, defined as undertaking actions that bring about change in existing structures rather than the formal position in an organization: “The carrying out of new combinations we call ‘enterprise’, [and] the individuals whose function it is to carry them out we call ‘entrepreneurs’” (Schumpeter 1934, p. 74). Similarly, Schumpeter emphasizes among the functions of the entrepreneur the introduction of novelty and innovation and, crucially, the treading of untraveled paths:

We have seen that the function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way ... To undertake such new things is difficult and constitutes a distinct economic function, first, because they lie outside of routine tasks which everybody understands, and secondly, because the environment resists in many ways that vary, according to social conditions, from simple refusal either to finance or buy a new thing, to physical attack on the man who tries to produce it. To act with confidence beyond the range of familiar beacons and to overcome that resistance requires aptitudes that are present in only a small fraction of the population and that define the entrepreneurial type. (Schumpeter 1942, p. 132)

The relationship of startups, small businesses, and new job creation is complex and points toward the importance of a small number of rapidly growing firms (Coad et al. 2014; Haltiwanger et al. 2013). Although small firms create many new jobs, many of those jobs vanish as a fair share of the firms downsize or exit. In-depth studies on the United States suggest that the most important factor in job creation is not firm size but firm age

(Haltiwanger et al. 2013). Young firms tend to start small, which confounds estimates of the relationship between small-firm activity and net job creation. Once firm age is accounted for, these studies find no systematic relationship between firm size and the number of jobs created. A small fraction of young firms that grow rapidly account for most of the net job creation of startups, while small firms that remain small create few net jobs and have a high likelihood of eventually going out of business.

McCraw (2007) provides a commendable summary of Schumpeter's sophisticated theories about entrepreneurship in his various writings. Schumpeter especially emphasized the role of new firms that make innovations disruptive of the circular flow. The key role of the entrepreneur was to commercialize new technologies as innovators rather than develop the technology itself as inventors. Business activity is conceptually divided into distinct roles: the capitalist who provides risky funding, the inventor who develops new technology, and the innovator-entrepreneur who commercializes the invention. The most important of these roles is the innovator-entrepreneur, although the entrepreneur can—and often does—simultaneously assume several roles. In Schumpeter's abstract analysis, the entrepreneur is not a person, but a particular economic activity related to “blazing new trails,” striking out “along unconventional paths,” uprooting the equilibrium, advancing the economy, overcoming resistance to change from the status quo, and “breaking up old, and creating new, tradition” (Schumpeter as quoted in McCraw 2007, p. 70 and p. 161–162). Entrepreneurs should therefore be seen primarily as individuals assuming a specific role in the marketplace. Indeed, the success of many entrepreneurial firms cannot be credited to a single individual but rather to tight-knit teams of complementary agents, all contributing their particular competencies and resources to the venture (Elert and Henrekson 2021). Schumpeter also stressed the psychological characteristics of entrepreneurs, including leadership and the willingness to go against the grain. Since entrepreneurship is defined as a particular function, entrepreneurs cease to be entrepreneurial as soon as the innovative phase of their firms has come to an end.

In Schumpeter's view, entrepreneurs must overcome immense difficulties, including not least “the resistances and uncertainties incident to doing what has not been done before, [which] is accessible for, and appeals to, only a distinct type which is rare” (Schumpeter 1928, p. 379–380). The greatest resistance often comes from incumbent firms threatened by a new product or service (Encaoua and Hollander 2002). Once radical new innovations break through, they gradually become part of the conventional system of doing business: “The more an innovation

becomes established, the more it loses the character of an innovation and the more it begins to follow impulses, instead of giving them” (Schumpeter 1939, p. 340).

3. Institutional entrepreneurship

Institutions largely determine both the extent of entrepreneurship and the way that it is allocated across different activities, including whether it is socially productive or non-productive (Baumol 1990). Institutions that support economic freedom lower transaction costs for such entrepreneurial discovery. However, how do welfare-enhancing institutions come about? In subsection 3.1, we point out that Schumpeterian entrepreneurs are not only guided and constrained by existing institutions but can pave the way for institutional change through business decisions that over time may crystallize into or influence formal institutions. In subsection 3.2, we show that this process is an integral part of gradual evolutionary change within the economic system as expounded by Hayek. Thus, entrepreneurs can also alter institutions both directly and indirectly (Henrekson and Sanandaji 2011; Elert and Henrekson 2017).

3.1 Schumpeterian institutional entrepreneurship

Entrepreneurs, broadly defined, can influence institutions in a number of ways. So-called social and policy entrepreneurs can influence formal institutions directly, whereas business entrepreneurs can indirectly alter formal institutions through business activity that shifts the incentive structures of policymakers or through evasive entrepreneurship that circumvents regulations and thereby makes them obsolete. Here, we are interested in the interplay between business entrepreneurs and institutions in the context of innovative ecosystems (Stam 2015; Autio and Levie 2017).

Universities, research institutions, banks, and other organizations are sometimes actively remodeled by energetic individuals to better interact with entrepreneurship. As stressed by Ahokangas et al. (2018, p. 401), “entrepreneurship itself cultivates the development of ecosystems, that is, a favorable business climate depends on entrepreneurship.” The experience and proven practices of the first waves of successful entrepreneurs to some extent become codified in emergent institutions, thereby ensuring that future entrepreneurs can benefit from the lessons learned by their predecessors.

A key component of the evolution of successful entrepreneurial ecosystems was the emergence of the venture capital (VC) finance model in the postwar era. VC is not merely a source of finance; it also combines active support with the use of complex contracts to solve

principal-agent problems between founders and financiers (Gompers and Lerner 2001; Kaplan and Strömberg 2003; Henrekson and Sanandaji 2018a).

The development of this model is a cogent illustration of how institutions and practices are cocreated by entrepreneurs and complementary agents through an adaptive learning process, i.e., an emergent Hayekian spontaneous order.

The flexibility of the institutional system in the United States likely played an important role in this regard, as it allowed entrepreneurs and venture capitalists to develop new types of financial contracts, employee contracts, compensation systems, shareholder rights, and industry culture. Some of these changes involved formal institutions, such as the tax code pertaining to compensation, while others related to informal institutions, such as industry culture and stakeholder practices. Still others can rather be viewed as connected to structural and knowledge capital, such as advanced standard contracts and knowhow regarding how workers with key competencies are recruited most efficiently.

In some cases, firms were free to develop these informal (or semiformal) institutions on their own, whereas in other cases, the state accommodated them by passing appropriate legislation, which was lobbied for by the business sector.

Countries with rigid institutions face great difficulties in developing a VC sector. This has turned out to be the case in several European countries. Over time, some countries enacted reforms inspired by the success of the American model, although rarely achieving as much success. The VC model is not flawless, and there are many other ways of financing new ventures. However, the success of this refined method is evident in the data. The institutional arrangement in the VC model is not only a way to enhance entrepreneurial innovation; it is itself an entrepreneurial innovation.

Common law countries have more VC activity as a share of the economy, including when other factors are controlled for (La Porta et al. 1998). Several causes of this trend have been suggested, among them stronger shareholder protection (La Porta et al. 1998; Bonini 2012; Cumming, Schmidt, and Walz 2010). Another possible explanation is that common law countries are more amenable to institutional entrepreneurship, permitting entrepreneurs and venture capitalists to develop entrepreneurial ecosystems well suited to local conditions.

It has been known for a long time that business activity, such as innovative entrepreneurship, can benefit from geographic concentration in clusters (Marshall 1890; Audretsch and Feldman

1996). By locating in an area where other similar firms operate it becomes possible to observe and take advantage of the tacit knowledge of other firms (Descrocher 2001). This can be done by first-hand observing competitors and suppliers, by informal interchanges with local people in the same industry, and by hiring experienced people with valuable tacit knowledge.

Although the evidence is somewhat mixed, cluster-based high-tech firms tend to be more innovative and productive than otherwise similar firms (Grashof and Fornahl 2021; Moretti 2021).¹

While there is little doubt that clusters are substantively important, public strategies to create them have been argued to be largely ineffective (Lerner 2009; Isenberg 2011a). The world's most successful cluster was not designed or planned by the state: "Silicon Valley just evolved" (Isenberg 2011a, p. 4). One concept that has gained increasing attention is the entrepreneurial ecosystem—that is, an interactive setting including support structures for entrepreneurship (Ahokangas et al. 2018). The ecosystem includes venture capitalists and business angels, specialized professionals such as lawyers and accountants, a talent pool, universities, large incumbent firms, and, not least, informal institutions that regulate their interactions. The desirability of these ecosystems raises the obvious question of whether they can be deliberately designed or whether they can emerge only on their own (Mason and Brown 2014; Ahokangas et al. 2018).

A crucial point that has been noted is that the emergence of such entrepreneurial ecosystems is driven by past entrepreneurial experiences that reshape the environment (Auerswald 2015). Experienced entrepreneurs who have already built their own companies frequently continue working as mentors, business angels, or venture capitalists, thereby guiding other firms. Entrepreneurship attracts technical talent and specialized support staff such as patent lawyers or consultants. An entrepreneurial culture as well as human capital develops gradually and inspires new firms. At the same time, informal and formal rules adapt to better suit

¹ In their meta-analysis of a large number of studies Grashof and Fornahl (2021) report that a negative firm-specific cluster effect occurs more frequently in low-tech industries. This is to be expected. Tacit knowledge is likely to be more important in high-tech industries and the negative factors of being located in a cluster—higher cost of land and of all kinds of labor—are more likely to outweigh the positive factors in low-tech industries. Moreover, Grashof and Fornahl compare existing firms, which were started, survived, and possibly thrived. This is partly because they evolved in an environment that was beneficial for them. Thus, whether a firm is located in a cluster is endogenous. By contrast, our claim is that policies that facilitate the spontaneous emergence of dynamic clusters are more likely to indirectly spur the emergence of Schumpeterian firms.

entrepreneurship; an example of this is the gradual development of convertible contracts to solve agency problems (Cumming 2005). Local and national public sector institutions can also adapt to the emergence of entrepreneurial ecosystems, as in the case of the tacit convention that gains on stock options in VC-funded entrepreneurial firms in the United States are taxed at favorable capital gains tax rates (Gilson and Schizer 2003; Henrekson and Sanandaji 2018b).

Entrepreneurial ecosystems are often characterized by cultural norms of knowledge sharing, open-source solutions, and voluntary cooperation—a type of commons (Ostrom and Hess 2007; Potts 2018, 2019). This creates another challenge for public sector engineering of entrepreneurial ecosystems due to the tendency of top-down interventions to crowd out reciprocity and collective action based on intrinsic preferences (Ostrom 2005).

Realizing that Schumpeterian entrepreneurs often, although not always, improve upon the institutional setting in which they operate is of crucial importance for policymaking aimed at promoting entrepreneurship. Such improvements emanate from pertinent local knowledge possessed by entrepreneurs themselves. This makes it difficult for policymakers to obtain and to ascertain the veracity of such knowledge. In turn, it becomes problematic to design and implement specific policy measures to support Schumpeterian entrepreneurs. Instead, policies aimed at creating an enabling environment conducive to change is more likely to be successful.

3.2 The Hayekian view on institutional entrepreneurship and knowledge in the market

The discussion on entrepreneurial search, discovery, and experimentation as well as institutional development is intimately related to Friedrich Hayek's theories, although these were broader and more implicit on the specific role of entrepreneurs (e.g., Hayek 1944, 1945, 1973, 1978). As extensively discussed by Ebner (2005), according to Hayek's broader theories, gradual evolutionary change within the economic system is promoted by entrepreneurship. In Hayekian terms, pioneering entrepreneurship facilitates institutional change through evolution in traditions and cultural rules.²

² Ebner (2005) traces this concept of entrepreneurship to the Austrian economist Friedrich von Wieser, who viewed entrepreneurs as pioneers who opened new paths through entrepreneurial leadership.

Hayek emphasized the role of change by entrepreneurs and other agents as well as a gradual evolution in rules and institutions. The rules of society are shaped by customs and habits, which are not purposefully designed but rather developed through a spontaneous process in which pioneering entrepreneurs play a vital role. Technological and institutional innovations are driven concurrently by a process of trial and error. Over time, novel paths and innovations crystallize into customs. Societies differ in the extent to which they allow this discovery process and the concomitant violation of existing customs. In addition to business entrepreneurs, the Hayekian view includes agents (although they are not explicitly referred to as entrepreneurs) who act as what we today would label institutional entrepreneurs and actively change conventions—“rule-breakers” who end up as “path-breakers” (Hayek quoted in Ebner 2005, p. 144).³ In this theory, the role of informal institutions and culture is emphasized, as is the role of individual action in the process of change. Hayek (1979, p. 161) writes:

Most of these steps in the evolution of culture were made possible by some individuals breaking some traditional rules and practicing new forms of conduct—not because they understood them to be better, but because the groups which acted on them prospered more than others and grew.

It is crucial to understand the rationales for two central elements of Hayek’s approach: his rejection of central planning and the idea that the state should guide development. The basis of his rejection of central planning rests on the fact that knowledge is extraordinarily decentralized, often both tacit and local, and no single individual has access to even a fraction of the totality of economic information. This explains one of the most important roles of entrepreneurs, who have access to unique insights and whose role it is to exploit this knowledge—be it via an incremental contribution (Kirzner 1973) or a radical disruption of the routines of the circular flow. Since economically relevant knowledge in society is dispersed and exceedingly complex, entrepreneurial activities are unpredictable by nature and very difficult to “list and file in advance for the use of a central planning authority when the occasion [arises]” (Hayek 1976, p. 187). A second and related element is the distinction between the made order and the spontaneous order: The former is an artificial construction that is deliberately designed, whereas the latter is a self-organized system that is a product of

³ For an introduction to the by now fairly voluminous literature on institutional entrepreneurship, the reader is referred to the collection of articles in Henrekson and Sanandaji (2012).

human action (Hayek 1973). According to Hayek, neither technological advances nor the growth of related institutions can be foreseen and controlled, which makes it almost impossible to engineer a social order.

Koppl (2008) points out that entrepreneurship policy is unlikely to succeed when it presumes that the judgments of policymakers can outperform the unplanned results of the market process. Entrepreneurial activity is a decentralized and unplanned process. When a large number of independent agents interact in a competitive arena, the aggregate development of the market is highly complex and virtually impossible to compute. Firms also interact strategically with their input suppliers and customers. While each firm plans in this environment, the overall process is not planned, and the ultimate outcome cannot be predicted ahead of time. The market is characterized by a gradual discovery process that government planners are highly unlikely to be able to predict and compute: “The entrepreneurial market process does not know where it is going until it gets there, nor does it need to” (Koppl 2008, p. 920).

The Hayekian view on institutional change can be compared to the evolutionary view of biological change (Whitman 1998). Institutional change is a slow-moving process without a clear end in sight, but where organizations, like organisms, try to adapt as well as possible to the current circumstances. Hayek did not suggest that the current institutions represent the best possible outcome, indeed social norms and institutions can often be stable and efficient in upholding social stability while contributing to severe poverty (Acemoglu and Robinson 2019). attempts to improve existing institutions could backfire because of insufficient or erroneous information. A case in point is outside intervention to implement political change by inserting a new political leadership in a country lacking democratic tradition. Despite good intentions, this could very well lead to a worse outcome—designing or redesigning institutions by political decrees is often immensely difficult.

The Hayekian view therefore complements the Schumpeterian perspective by drawing attention to how local knowledge affects markets and how institutions are spontaneously shaped to facilitate such knowledge. This perspective is of the utmost importance in discussions of the strengths and weaknesses of practical policy.

4. Types of entrepreneurship policy

Until the mid- to late 1990s, entrepreneurship policy was largely equated with policies aimed at making self-employment a more attractive occupational choice, irrespective of the quality

of the business idea and the perceived competence of the prospective entrepreneurs/business owners. In recent decades, there has been a clear shift in policy focus toward the fostering of growth-oriented entrepreneurship (e.g., Mason and Brown 2014). However, although firms with high growth potential are not necessarily new firms, policies in many countries continue to emphasize startups, albeit restricted to growth-oriented ones.

Although policymakers are increasingly recognizing the merit of taking a systemic view aimed at improving the entrepreneurial ecosystem rather than targeting individual firms (e.g., Autio 2016; Stam 2015), policymakers rarely distinguish between firms whose rapid growth is based on replicative entrepreneurship and those that base their operations on Schumpeterian innovations. We make this additional distinction in *Figure 1*, where we distinguish between four categories of business activity based on the double dichotomy between low versus high impact and replicative versus Schumpeterian activity. A replicative entrepreneur improves upon existing products and services, for example by making incremental improvements in quality, lowering costs, or adapting the innovation to a different institutional framework. While important for economic growth, such innovations are not Schumpeterian in the sense that they produce a major structural change. However, over time they strongly contribute to economic growth and overall economic conditions (Acs 2010).

There exists no clear-cut definition of low or high impact, and many firms are in an intermediate zone. It should also be noted that Schumpeterian firms are not necessarily high impact: Their industry may be of minor aggregate importance, the firm may be a recent startup that has not yet become sizeable, or despite the firm being Schumpeterian in that it is based on a radical innovation, it may never take off. We focus on policies aimed at promoting firms belonging to the fourth panel—that is, firms that are both Schumpeterian and high impact.

The most radical Schumpeterian innovations involve the conceptual creation, *ex nihilo*, of distinctly new products or technologies that hitherto did not exist (Thiel and Masters 2014). This can be contrasted with various degrees of incremental innovation, whereby an existing and familiar product is improved. There are theoretical debates on how entrepreneurship relates to information and whether the actions of entrepreneurs should be viewed as discovery or creation (Knight 1921; Kirzner 1973; Alvarez and Barney 2007). One stance is that opportunities are best characterized as imagined by entrepreneurs, who conceive of a novel idea and execute it (Foss, Foss, and Klein 2007; Foss and Klein 2010).

Figure 1. Four categories of business activity.

	Low impact	High impact
Replicative	1. E.g., sole proprietors, mom-and-pop operations, self-employed professionals selling services.	2. E.g., firms that have grown large through replicative activity in finance or real estate.
Schumpeterian	3. E.g., disruptive firms in small sectors; recently created innovative start-ups.	4. E.g., entrepreneur-founded firms that have grown large through technological or business innovations.

Source: Adapted from Henrekson and Sanandaji (2020, p. 737).

To design and evaluate an effective entrepreneurship policy, one must be able to measure the prevalence of the targeted type of entrepreneurship. However, quantifying entrepreneurship across countries has turned out to be challenging, adding complexity to the problem of how various types of entrepreneurship should be encouraged. While both researchers and policymakers are careful to distinguish between policies promoting small business activity in general and those that focus on innovative entrepreneurship, few empirical studies distinguish between replicative and Schumpeterian innovation.

Clearly, government should aim to improve the conditions for high-impact Schumpeterian entrepreneurs. Replicative entrepreneurship is unlikely to face comparable difficulties in the market, due to the lower risks involved when making small improvements or replicating an existing good or service. While low-impact Schumpeterian firms can have large aggregate effects, it is less likely that using public funds to foster such firms will be beneficial from a cost-benefit perspective.

Although high-impact Schumpeterian firms are difficult to identify *ex ante*, this has not stopped governments from spending substantial amounts to achieve this goal. Typical policy recommendations revolve around addressing markets failures, notably alleged market failures in financial markets said to stand in the way of the success of such firms.

5. Market failures and entrepreneurship policy

In theory, there are several market failures that could affect Schumpeterian entrepreneurship, and adequately addressing them could lead to an increased supply of such entrepreneurship. A strong argument can be made that market actors underinvest in research since knowledge is a public good and since social gains from research and innovation are not fully captured by the

inventor (Arrow 1962). The argument for public investment in basic research also appears to be supported by historical experience and by the important role that military technology has played in high-tech innovation. Indeed, the returns from Schumpeterian entrepreneurship mainly accrue to consumers in the form of lower prices and higher quality (Nordhaus 2004). Innovation often requires funding, but the financial markets for funding R&D are far from perfect, especially for younger firms (Hall 2002). Increasing the supply of funding for firms should therefore have the potential for large payoffs, especially if the additional funding does not crowd out private funding. Likewise, positive effects can be expected from the scale and spillover effects that arise in clusters (Glaeser, Kerr, and Ponzetto 2010). Any policies that could create high-technology and dynamic clusters in a country could have large positive effects on economic growth.

Most industrial countries have policies aimed at stimulating entrepreneurship, often spending a great deal of resources to achieve this goal (Acs et al. 2016; Block et al. 2017). Public entrepreneurship policies have been criticized for being ineffective and for giving rise to high deadweight costs (Meager, Bates, and Cowling 2003). It has turned out to be exceedingly difficult to isolate causal effects of entrepreneurship policy (OECD 2015). This problem is magnified by the fact that policies are implemented in ways that make evaluations difficult. Governments seem reluctant to introduce policy reforms as randomized control trials amenable to high-quality evaluations *ex post*. Nevertheless, there are many empirical studies on the effects of innovation policy. Several studies indicate that such policies may have positive effects, but the results are mixed and seldom based on methods that allow a causal interpretation (Cumming and Johan 2010). One conclusion is that policies aimed at stimulating innovation are difficult to design effectively, and further research is needed (Block et al. 2017).

It is beyond the scope of this paper to comprehensively review the immense literature on support to firms and firm level R&D. A major focus of that literature is to resolve the endogeneity issues related to public interventions that seldom are designed as randomized controlled experiments. For the purposes of the present study, it is sufficient to lean on existing surveys and overviews and their lack of consensus. In survey of 77 empirical evaluations of public subsidies on firm R&D Zúñiga-Vicente et al. (2014) found mixed results. Given the forceful theoretical argument for subsidizing firm R&D, this suggests that market failure in capital markets alone cannot explain a lack of innovative entrepreneurship.

Dalziel (2018) reviews the research on business support programs. The study shows that there are very few evaluations of government programs to support innovation. Business support programs that are discussed include tax credits, grants and loans, loan guarantees, and public support through third-party innovation intermediaries. The number of programs is enormous; globally, there are an estimated 7,000 business incubators and accelerators. Since most programs lack a control group of otherwise similar firms that did not receive government support, they are inherently difficult to evaluate. The empirical evidence regarding the effectiveness and cost efficiency of these programs is therefore highly uncertain.

Countless government programs have attempted to center high-growth entrepreneurship policies around universities and encourage certain activities—such as incubation facilities, spinoff programs, and angel investor clubs (Mason and Brown 2014; Link and Sarala 2019). However, despite these efforts, few university spinoffs become high-growth firms; the majority remain small or fail. An interesting comparison has shown that university spinoffs tend to perform considerably worse than spinoffs of private companies in terms of both growth and survival rates (Wennberg et al. 2011). Spinoffs of private firms, particularly large firms in entrepreneurial regions, are far more likely to become successful (Klepper 2016). Entrepreneurship originating directly from universities has not proven as successful as hoped, and government support has thus far not turned universities into hotbeds of entrepreneurial activity. Nevertheless, universities have key functions in the overall entrepreneurial ecosystem—for instance, in attracting talent and advancing research (Mason and Brown 2014).

Governments have also developed a range of initiatives to provide organizational sponsorship to entrepreneurs to help them grow and to shelter and support nascent ventures. Public cluster policies have been shown to have indirect negative effects on firms outside the targeted industries (Audretsch et al. 2019). Creating resource-rich environments can also shelter firms too much and blunt their creative edge, while more demanding conditions may push firms to develop creative solutions (George 2005; Bradley et al. 2011). Evaluations of public policy cluster programs have pointed to other possible downsides, such as overspecialization (Uyarra and Ramlogan 2016). Acs et al. (2016) discuss some of the flaws of entrepreneurship policy. The authors review the evidence and conclude that “most Western world policies do not greatly reduce or solve any market failures but instead waste taxpayers’ money” (p. 35). One explanation is that policies aimed at increasing the number of firms tend to promote small businesses with low growth ambition instead of high-impact entrepreneurial firms.

Policymakers' attempt to create a large number of firms, hoping that a few will become successful, does not attach sufficient importance to the type of business that is supported. Acs et al. also point out that entrepreneurship policy tends to be narrow, backward looking and static, ignoring that support can backfire by causing agents to change their behavior—for example, by not growing beyond a certain size to continue to benefit from regulatory and tax concessions offered to firms below a certain size threshold.

Isenberg (2010) points out that the attempts of many governments around the world to kick-start entrepreneurship, guided by public officials, have been an abysmal failure. He argues that instead, there is a role for more subtle government policy in supporting entrepreneurship. The government should not attempt to create clusters or entrepreneurial ecosystems, but when incipient clusters that have emerged spontaneously are detected, the government should facilitate and support their organic growth. The state should instead gently encourage the formation of supporting economic activities around already successful ventures. A similar conclusion is reached by Porter (1998), who concludes that governments “should reinforce and build on existing and emerging clusters rather than attempt to create entirely new ones” and that “most clusters form independently of government action—and sometimes in spite of it.”

At times, the aim of policies is not to improve existing markets but to create them from scratch. In some cases, markets could be so dysfunctional that they completely break down (Akerlof 1970). While this discussion is most common regarding capital markets in developing countries (Banerjee et al. 2003), a related discussion concerns the nature of radical innovations that completely change a market or even an entire industry and ways that governments can create these new markets (Mazzucato 2016). This suggests a more holistic role for governments, whereby they boldly invest in firms and projects to create more radical innovations than the market could have produced. However, as will be discussed below, it is quite unlikely that governments are systematically capable of targeting these innovations, not least because such innovations are often accompanied by changing institutions.

One idea for increasing the rate of innovation could be to drastically increase aggregate demand using macroeconomic policies. This recommendation has been especially highlighted given the recent discussion on secular stagnation, with sluggish growth in most Western countries following the financial crisis of 2008 (Summers 2015). However, an in-depth

discussion of the aggregate growth effects of demand-side policies is beyond the scope of this paper.

The lack of supportive empirical evidence does not in itself prove that all entrepreneurship policies have failed, only that we currently lack evidence of their success. Some studies have concluded that public entrepreneurship support policies are worthwhile despite their costs (Autio and Rannikko 2016), and while there are many disappointing experiences, there are also a few studies using advanced methods that indicate positive causal effects. Howell (2017) finds that winning the competitive Small Business Innovation Research (SBIR) award in the United States made it more likely for firms to attract VC financing and increase their revenue. One recent study also found positive effects of interventions in the UK (Criscuolo et al. 2019). Nevertheless, an overall evaluation of the literature strongly suggests that unequivocally positive effects of public interventions are rare. Given the strong theoretical case for public support for firm-based innovation, additional explanations for the lack of positive effects are called for. It seems unlikely that the large variation in efficiency of such policies should simply be due to bad luck or poor implementation.

6. Two types of policy failure

The lack of robust success of policies that aim to reduce market failures and increase Schumpeterian entrepreneurship warrants a more thorough discussion than just attributing this lack of success to bad luck or poor implementation. Two candidate explanations are political failures and the very nature of Schumpeterian entrepreneurship.

6.1 Political failures

Market failure and second-best considerations would justify policy interventions by a perfectly benevolent social planner with full information. On the other hand, if those assumptions do not hold, policy interventions are far less likely to be effective. In addition to market failure, public choice analysis points to the risk of government failure if policymakers are guided more by self-interest than by the pursuit of enhanced social welfare. Evaluating the desirability of entrepreneurship policy therefore requires discussions of both market failure and government failure (Sandström et al. 2018).

In the public choice literature, there is a long tradition of studying the connection between policy formation and the incentives of firms, interest groups, and self-interested politicians, who want to maximize their reelection chances (Buchanan and Tullock 1962). An important perspective in this tradition is that one cannot assume that politicians always strive to

maximize what they perceive to be the social welfare function; they may not even act in the public interest (Buchanan 1975). After all, like other individuals in society, politicians are individuals driven by their own goals and aspirations. Combined with the fact that narrow special interests have proven to be quite adept at organizing themselves and lobby for additional resources (Olson 1965), this greatly reduces the likelihood that the resulting policy measures will be efficient.

For instance, many entrepreneurship programs are designed to favor specific regions and local constituencies, not entrepreneurship per se irrespective of location. Subsidy programs, contracts and procurement activities can also be used to favor specific groups (Lucas et al. 2018). In addition to incentive problems, public entrepreneurship policy suffers from an information problem; even an unbiased and benevolent social planner does not have the information required to implement welfare-enhancing entrepreneurship policy. The extensive debates on industrial policy have often made the point that the central government and its agencies have a poor track record in picking winners. The benefits of government innovation policy emanating from, for example, positive externalities must be weighed against any negative effects caused by public choice problems as well as standard distortions such as the deadweight cost of taxation, crowding-out effects, the inflexibility of government bureaucracies, and the information problem facing central planners.

Any program that provides funding, either directly or via tax breaks, must ensure that it creates incentives that are aligned with the intended outcome. Programs and policies often create moral hazard problems, for instance, by giving enterprising individuals incentives to become “subsidy entrepreneurs” (Gustafsson et al. 2020) or simply submit worthless ideas in hopes of obtaining funding. Some firms in the U.S., often called “SBIR mills,” can survive on subsidies for a long time (Mann et al. 2015). Firms that keep obtaining such grants despite their lackluster ideas could explain why some evaluations of the SBIR program find evidence of crowding out of private capital (Wallsten 2000), since such firms’ goal is only to lower their cost of capital, not to secure access to otherwise-unavailable funding.

A key issue for any government policy is to prevent regulatory capture (Stigler 1971; Peltzman 1976). Any rule created to favor a certain type of firm can often be distorted through subtle lobbying such that the rules function to the de facto benefit of a few insider firms rather than of social welfare. While this insight is old, the 2008 financial crisis made clear that many of the rules and regulations that were intended to create stability in the financial system and

increase home ownership had been captured by the financial sector, with enormous negative effects on the public at large (Johnson and Kwak 2011; Carpenter and Moss 2013). These risks are difficult to prevent whenever governments create nonneutral rules for firms since the incentives for firms to lobby for changes in their favor are so great (Tullock 1988). At the same time, nonneutral rules and policies are at the core of any type of policy that promotes a certain type of firm and organization. Taking both perspectives into account simultaneously is no easy task.

A system characterized by special treats and regulations for select categories results in a complex system with detailed rules, exceptions, and exceptions to the exceptions. In the end, this exacerbates all activity due to increased administration and information costs. These costs are almost always more burdensome for small and new firms because of the existence of a sizable fixed-cost component. Moreover, complex systems provide opportunities for unproductive and destructive entrepreneurship (Baumol 1990).

For a longer discussion of political risk in relation to innovation policies, see, e.g., Kärnä et al. (2020). Lucas et al. (2018) discuss entrepreneurship policy from a critical, mainly Austrian, perspective. In addition to discussing different types of entrepreneurship policy, they also provide a rebuttal of Mazzucato's (2013) claim that the main driver of entrepreneurial activity is government-funded research. For additional criticism of this position, see the various contributions in Wennberg and Sandström (2022).

The varying effects of different policies suggest that there is room for policymakers to learn from more successful policy initiatives while phasing out less efficient ones. However, politicians may be reluctant to discontinue inefficient policies if they fear that this would be interpreted by voters as a sign of incompetence (Dur 2001). Discontinuing a support program and admitting that it was ineffective or even harmful could be socially optimal, but it would be unlikely to boost a politician's re-election prospects.

The ability of Schumpeterian entrepreneurs not only to create companies but also to create new institutions as an integral part of their activities stands in stark contrast to the view that policymakers can shape institutions ex ante to foster Schumpeterian entrepreneurship. The knowledge of what policies and institutions that would be most beneficial for a specific firm or cluster of firms is embedded, often in tacit form, in the entrepreneurs or the entrepreneurial teams (Kučař 2016). This does not mean that policymakers are invariably precluded from obtaining such knowledge. However, its fragmented and decentralized nature combined with

the divergent incentives of firms and policymakers makes it unlikely that the ensuing policy measures would be efficient.

Clearly, it is not the case that all policies fail due to political failure, but the risk of political failure is a factor that adds to the difficulty of achieving efficient outcomes. Policy recommendations taking political risks into account are still rare. An excellent example of how such an analysis can be incorporated is Hassler et al. (2016). They recommend taxation rather than cap-and-trade as a method to reduce carbon emissions, precisely because the former is less susceptible to political risk than the latter. Nevertheless, the fact that policies are seldom optimal further strengthens the pessimistic view regarding how much public policies can be expected to achieve in regard to such a complex issue.

6.2 The unpredictable and contrarian nature of Schumpeterian entrepreneurship

A further difficulty in creating efficient policy, even if political failures can be overcome, concerns the very nature of Schumpeterian entrepreneurship. Isenberg (2011b) highlights the contrarian role of entrepreneurs and the fact that part of the value of an opportunity lies in its having been overlooked by everybody else. Entrepreneurs play a vital role in continually challenging conventional wisdom. Isenberg (2011b, p. 4) specifically writes about the problem of cluster policy: “One of the unrecognized problems of sectoral cluster strategies is that picking sectors for preferable attention by a top-down analysis of comparative advantage actually dulls the entrepreneurial spirit.”

Innovations are shrouded in uncertainty in Knight’s (1921) sense, meaning it is impossible for private and public actors to know where the next generation of high-growth firms and radical innovations will emerge. A key goal for policy should, therefore, be to level the playing field, to make sure that no paths are closed unnecessarily, leaving the final selection to the entrepreneurial society rather than the entrepreneurial state.

Efforts to increase entrepreneurship by solving market failures through direct government action, such as increasing access to credit, represents a form of top-down policymaking. Policymakers aim to improve markets and institutions, hopefully guided by a good theoretical understanding of how the economy functions (Aghion and Festré 2017). While classical industrial policy, which directly pointed out which industries to subsidize and promote fell out of fashion in the 1990s, other types of vertical approaches continue to be popular (Rodrik 2004). More importantly, spearheaded by, inter alia, the European Commission, there is now a

push for a new era of “transformative” innovation policy. By pointing to the importance of tackling societal problems, as well as the difficulty in changing innovation direction in innovation systems, government intervention aimed at influencing the directionality of innovation systems is legitimized (Hekkert et al. 2020) by advocating and implementing so-called mission-oriented policies. Mazzucato (2018, p. 804) specifically highlights that mission-oriented agencies should tilt the playing field so that the “the relevant organizations [make] choices on what to fund, going against the more classic position that the point of policy making is simply to level the playing field.” These agencies and their programs are thus expected to tilt “the playing field through missions aimed at a public objective, with other policies needing to be introduced to make it more profitable to move in that direction.” This perspective does not take the unpredictable nature of Schumpeterian entrepreneurship into account.

A problem with this approach, as discussed above, is that policymakers rarely have sufficient information to adequately understand evolving markets. Markets are continuously changing, and new innovations are almost impossible to predict (Kirzner 1997). Not only are market failures often quite difficult to resolve even without political frictions and might be difficult to solve given those frictions. The difficulty for a public agency to ex ante correctly identify which ventures and firms to promote is a constituent part of the very nature of Schumpeterian entrepreneurship. Indeed, not even professional venture capitalists, who have high-powered economic incentives to do so, are able to avoid funding unsuccessful firms and projects. This observation strongly suggests that it is unlikely that civil servants, who do not personally profit from the success of firms that they invest in, should be systematically more efficient.

Given that specific top-down policies run a large risk of being unsuccessful, what policies stand a greater chance of success? While there is no agreement on which active policies are efficient, there is a clear consensus that stable and efficient institutions have a large positive effect on economic growth (Rodrik et al. 2004; Besley and Persson 2011). Stable and disinterested rules regarding property rights, conflict resolution and non-distortionary taxation provide fertile soil for new projects and ideas to grow. While large government sectors can be detrimental to economic growth (Bergh and Henrekson 2011), well-designed welfare state arrangements should not have too large a negative effect (Bergh 2020). Therefore, politicians should not infer that they must implement drastic, “neoliberal” reforms to improve the innovation climate.

The benefits of both higher education and funding of research are well established and might become even more important in the future given the sharp increase in the amount of R&D required for a given increase in productivity (Bloom et al. 2020). To make matters worse, many established firms do not seem to spend enough on R&D even to maximize private returns (Färnstrand Damsgaard et al. 2017). This suggests that generous nontargeted funding of universities and other research institutions has large potential to bring forth new ideas, even if the actual implementation of those ideas takes place in firms rather than in public organizations. From a political perspective, a drawback of such reforms is that they make it more difficult for politicians to get credit for success. If politicians do not receive credit for the success of a policy, there is a risk that they will not see such policies as worthwhile to implement from a re-election point of view (Strömberg 2004).

A well-functioning market economy can lead to the emergence of collaborative innovation blocs, in which a fruitful mixture of firms, competent consumers and financiers work together to improve the functioning of the market (Elert and Henrekson 2019, 2021). Such dynamic clusters are bottom-up phenomena that can emerge anywhere (Klepper 2016), and policy can be used to facilitate their endogenous formation by improving initial conditions. First, real estate markets can be reformed so that housing prices reflect scarcity and preferences; where appropriate, zoning laws should also be liberalized and red tape that could curb cluster development removed (Glaeser and Tobio 2008; Glaeser 2011). Local policymakers should also provide an infrastructure that allows smooth transportation and commuting (Andersson and Henrekson 2015).

More generally, to the extent that policymakers undertake initiatives, they should address the source of problems rather than treating the symptoms. For instance, a lack of venture capital is often seen as a reason for the government to step in as a substitute despite the evidence that soft loans and similar support for startups from government agencies are ineffective (Lerner 2009; Sandström et al. 2016). The knowhow to raise such capital is part of the skill set of a successful, productive entrepreneur (Evans 2016). Instead, policymakers should go to the source of the problem by identifying and rectifying the institutional shortcoming that impedes the emergence of a private venture capital market.

7. Discussion and conclusion

Numerous attempts have been made by governments to quickly establish ecosystems based on Schumpeterian entrepreneurship or more directly try to support firms to make them more

innovative. Most of these attempts have failed or underperformed relative to expectations for reasons that previous research has been unable to explain convincingly. Public programs have had some success in promoting routine, incremental innovation—but rarely pathbreaking, Schumpeterian entrepreneurship. There is no consensus in the literature regarding the costs and benefits of entrepreneurship policy or the circumstances under which it is likely to be most efficient.

We posit a partial explanation for why such top-down or vertical policies generally fail to create such firms and ecosystems where they will thrive. Schumpeterian entrepreneurship is contrarian; its function is to disrupt established patterns by imagining and executing unconventional, new innovations despite resistance from incumbent firms and other stakeholders. Therefore, it is inherently unpredictable and difficult to target from a policy perspective. If policymakers knew what the next radical innovation would be, there would be no need for private firms—let alone Schumpeterian entrepreneurs. Due to the continuously evolving frontier, policies that attempt to emulate the most recent entrepreneurial success instead promote replicative firms. While these firms contribute to economic growth by reducing costs and improving previous innovations, they are not pathbreaking and rarely reap the large profits awarded to high-impact Schumpeterian ventures. Furthermore, one should not assume that policymakers are benevolent social planners with near-perfect access to information. Instead, they should be modeled as rational actors with their own agendas that may or may not be in line with the public interest.

Moreover, Schumpeterian entrepreneurs not only establish firms but also create economic institutions, including the very entrepreneurial ecosystems in which they thrive. These ecosystems are industry specific, relying on culture and informal structures that have gradually evolved through the actions of past entrepreneurs and their interactions with each other and other complementary agents. Such ever-changing institutions are too complex to be fully understood by social scientists and difficult for central planners to design. Rather, the heavy hand of the state tends to obstruct their organic development and steer creativity along conventional pathways.

Government policy is more likely to succeed if it is aimed at a fundamental level—through actions such as enforcing legal institutions, investing in research and education, and removing regulatory obstacles—or promotes replicative non-Schumpeterian entrepreneurs in more predictable environments. The objections raised against top-down or vertical Schumpeterian

entrepreneurship policy do not imply that other types of public policy are a priori pointless or unsuccessful. Policies providing a sound macroeconomic environment, a fair and efficient judicial system, and a focus on the removal of bureaucratic red tape are beneficial for all types of productive entrepreneurship (Bradley and Klein 2016). Well-crafted policies need to address both information and incentive problems, something that is more difficult than commonly understood.

At the same time, it is important to stress the key role of non-Schumpeterian entrepreneurs in the economy. They provide goods and services, reduce marginal costs through incremental innovation, and generate jobs. Nevertheless, the deep-seated effects that Schumpeterian entrepreneurs have on society have stirred enormous interest among both scholars and policymakers and stimulated efforts to increase the supply of such firms.

Importantly, countries are likely to benefit from allowing entrepreneurs to cultivate new institutional structures and entrepreneurial ecosystems tailored to local and industry-specific conditions. When possible, the public sector should allow institutional flexibility for entrepreneurs to develop adequate rules and institutions pertaining to their ecosystems (Ostrom 1990).

This implies a bottom-up approach to policymaking favorable to institutional experimentation and regulatory flexibility to create new contractual forms and organizations. Decentralization increases the probability that entrepreneurs develop revolutionary innovations and form the new institutions needed to facilitate their exploitation. Rather than how to uncover the secret of steering this type of innovation, the crucial question for policymakers concerns how to foster a flexible framework that encourages Schumpeterian entrepreneurs to carry out the discovery process. An unanswered question, left for future research, is how to make such reforms attractive to policymakers who are seeking to maximize their re-election chances.

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