

intentions and few opportunities for meaning economic innovation. Instead, most policy initiatives that would have the effect of promoting valuable entrepreneurship would not be recognizable as such, because to be effective they would be rather tertiary to the act of starting a business: A central-payer health care would remove healthcare-related distortions affecting employment choices; greater STEM education would produce more engineers, some of whom might start valuable new firms; and labor market reform to encourage hiring immigrants in jobs they have been educated for would reduce inefficient allocation of talent to entrepreneurship.

2 The entrepreneur

Who is the entrepreneur is at the heart of much confusion about entrepreneurship policy. Leibenstein's (1968) suggests a theory of the economy and entrepreneurship, in which entrepreneurship is a significant factor in the development process. According to Leibenstein, the theory of competition gives the impression that there is no need for entrepreneurship at all. Let us start with a little microeconomics to lend clarity to the debate. If all inputs and outputs are marketed, if their prices are known, and if there is a clearly defined production function that relates inputs to outputs, then we can always predict the profit of any activity that transforms inputs into outputs. Let us look at an example.

Assume we have a supply and demand curve for commodity X where the quantity supplied and the quantity demanded are in equilibrium at price P. And the price of the commodity X is equal to the average total cost (ATC) and the marginal cost (MC). In other words, $P = ATC = MC$. In this world, economic profits are zero and there is no entry into the market. Now assume that demand increases for commodity X, price rises and we now have economic profit in the market. The short-run increase in demand will be met by existing suppliers but in the long-run higher profits will encourage the entry of new firms.

We now have an opening for the entrepreneur (Kirzner 1973). The assumption is that there are always agents that are ready to enter an industry if profits are above equilibrium. This is a fair assumption. But let's be clear, this type of entry is routine. By routine entrepreneurship we mean that the markets are well

established and clearly defined, prices are known and the production function is well specified and we have good information on the above. While some uncertainty remains, no new knowledge is being applied in the process. Routine entrepreneurship therefore is a type of management. More importantly, however, the entrepreneur here is the residual income recipient, i.e., the business owner. The entrepreneur here is entitled to both wages and profits. This definition of the entrepreneur is common in Europe and in many other places. So the entrepreneur enters business and the vehicle does not matter, if it is a sole trader, an establishment, a small business or a corporation.

This type of entrepreneurship is competition in the market. No new product is introduced. In exogenous entry, the firms exist exogenously as well as the product. Firms compete in the market on price and quantity. This typology goes back to the early analysis of Augustin Cournot, whose equilibrium concept corresponds to the one that today we associate with John Nash: Each firm independently chooses its strategy to maximize profit given the strategy of each other firm (Acs 2009).

However, routine entrepreneurship can lead to an important public policy issue. Is the entrepreneur qualified to run the business? Is s(he) a good manager? Does s(he) have enough capital? And does the entrepreneur have enough social capital to run the business? In other words does the entrepreneur enter with costs at the equilibrium level of minimum ATC? How long will it take the firm to reach minimum ATC? We can continue this line of inquiry but I think you get the point. Public policy can help disadvantaged individuals achieve success in business at a cost. Some of this could be market failure from a lack of finance for entrepreneurs and some of it can be from a lack of business training and entrepreneurial acumen and some can be from information asymmetries. In either event, it is a legitimate public policy issue.

In contrast to routine entrepreneurship at the other end of the spectrum, we have Schumpeterian or novel entrepreneurship (Baumol 1968, 2002). Novel entrepreneurship is about introducing something into the market that does not exist. In other words, the demand and supply curve do not exist. By novel entrepreneurship, we mean that activities necessary to create or carry on an enterprise where not all the markets are well established or clearly defined, and in which the relevant parts of the production function are

not known. In the case of novel entrepreneurship, not all of the markets exist or operate well and the entrepreneur, if s(he) is to be successful, must fill in for the market deficiencies. The gap filling and input-completing capacities are the unique characteristics of the entrepreneur. With endogenous entry influenced by the work on endogenous technical change, competition is for the market, where entry can replace the incumbent (Acs et al. 2009; Plummer and Acs 2014).

The main obstacle to our understanding of the entrepreneurial factor lies in the conventional formulation of the production function. The culprits are the following two assumptions: (1) that the complete set of inputs is specified and known to all actual or potential firms in the industry and (2) that there is a fixed relation between inputs and outputs. The first assumption is implicit. The second assumption is explicit but it is rarely challenged. In novel entrepreneurship, the supply curve does not exist and the ATC and MC curves are not known. In novel entrepreneurship, contracts for labor are incomplete, finance operates under asymmetric information, the production function is not completely specified or known, and not all factors of production are marketed. As a result, a role for those who can handle uncertainty and for entrepreneurial agency in the process of economic growth emerges.

In novel entrepreneurship, the public policy issue is not an unqualified or under qualified entrepreneur; on the contrary, s(he) is most likely very qualified. The public policy issue in novel entrepreneurship is about the enabling environment (Acs et al. 2014). The public policy question is, “Does the environment allow the entrepreneur to complete the production function and fill in the missing input markets?” This is a question of knowledge and knowledge spillovers, finance and human capital. Some countries may have better institutions to allow for these types of activities while others may not. Moreover, since competition here is *for* the market not *in* the market, some countries may be more reluctant to allow this sort of Stackelberg competition that combines endogenous entry and market leadership (Acs 2009). It creates disequilibrium.

Public policies to promote novel entrepreneurship as opposed to routine entrepreneurship are different and cannot be assumed to happen without policy intervention (Baumol et al. 2007). But this intervention is not about market failure because the markets do not yet exist (Stenholm et al. 2013). They are about

creating an enabling environment. Perhaps if we want to promote growth and innovation through novel entrepreneurship, Schumpeterian dis-equilibrating activities instead of Kirznerian equilibrating activities, some form of support for an enabling environment is needed.

3 Externalities and market failures motivating policy

The mandate for a place, albeit a community, city, region, state or entire country, to engage in entrepreneurship policy is motivated by market failures and externalities. There are five main types of market failures and externalities deterring people from becoming novel entrepreneurs. The first involves network externalities. Network externalities arise from the value of capabilities by an individual or firm and therefore its expected value, being conditional on a location within close geographic proximity to other entrepreneurial individuals and firms. This means the value of an entrepreneur’s ideas, ability to discover and develop opportunities and access key resources are place dependent.

The growing literature on entrepreneurial ecosystems (Li et al. 2015) suggests that being spatially located within an entrepreneurial ecosystem enhances the expected value accruing from entrepreneurship. Saxenian (1994) provides compelling documentation of the advantages offered to entrepreneurs accruing from entrepreneurial network externalities. Cities or regions with a paucity of entrepreneurial networks face an imposing barrier in attracting entrepreneurs. To address the market failure stemming from (a lack of) entrepreneurial network externalities, compensatory policies can induce entrepreneurs to locate in a place they would otherwise askew. It should be emphasized that the severity of this source of market failure is place specific and will be most prevalent in cities and regions which have not developed a vibrant entrepreneurial ecosystem.

The second source of market failure involves knowledge externalities. Arrow (1962) explained how and why knowledge constitutes a public good, in that that they are characterized both by non-excludability and by non-rivalry. Knowledge created by one firm or organization, such as a university, can be used by entrepreneurs to start and grow their

entrepreneurial businesses. There are two aspects shaping knowledge spillovers. The first involves the extent of knowledge generated or produced. The second involves its propensity to spill over. In terms of the first, some cities and regions are rich in knowledge based on R&D investments, human capital and university research, while other places exhibit considerably lower investments in knowledge. Similarly, some cities and regions have a rich thicket of spillover conduits, serving to facilitate the flow of knowledge and ideas from the organization creating them to the entrepreneurs that actually use them to generate innovation. According to the knowledge spillover theory of entrepreneurship, the decision to become an entrepreneur can be an endogenous response to knowledge created, but not commercialized, in an incumbent organization. By using that knowledge to start a new firm, the entrepreneur serves as a conduit for the spillover of knowledge (Klepper 2016). Cities and regions with a paucity of knowledge investments and weak institutions facilitating the spillover of that knowledge will generate a lower value of knowledge spillovers. By contrast, places with rich knowledge investments and strong spillover institutions will generate a high value of knowledge spillovers. The economics and management literature have concluded that such knowledge spillovers tend to be geographically localized within close geographic proximity to the knowledge source. Thus, to access such knowledge spillovers, which in turn can contribute to raising the expected value of the entrepreneurial activity, entrepreneurs need to be spatially located close to the source of that knowledge. Policy can address this market failure by both inducing investments in knowledge and facilitating knowledge spillover conduits, mechanisms and institutions.

The third source of market imperfection stems from failure externalities. Failed entrepreneurial firms can generate value that is used by third-party firms. For example, the semiconductor, Fairchild, failed in California. However, experience, ideas and product innovations generated and innovation were sufficiently compelling that they served to launch not only a host of companies, or what Klepper (2016) has termed the “Fairchildren,” but also ultimately served as the seedbed for the emergence of Silicon Valley (Klepper 2016). In deciding whether to become or remain an entrepreneur, the focus is typically on the

value created by and viability of the entrepreneurial start-up. This underestimates the actual value created for the place, i.e., the Bay Area, because some of the value created can be appropriated and commercialized by other entrepreneurs, even if the entrepreneurial start-up fails. Thus, entrepreneurship can create social value for the place, even if it does not for the actual entrepreneur. Policy can remedy the concomitant underinvestment in entrepreneurship by aligning the social returns to entrepreneurship with the private returns to entrepreneurship.

The fourth source of market failure emanates from demonstration externalities. A role model or demonstration that being an entrepreneur can be positive, regardless of the outcome, can influence the decision of others to become an entrepreneur as well. The market failure lies in the information that is transmitted that (1) being an entrepreneur is rewarding and viable, (2) certain capabilities and competencies are required, and (3) entrepreneurs are compatible with the particular place. The magnitude of the demonstration externalities is place dependent. A city or region characterized by a paucity of entrepreneurship may experience a higher entrepreneurial demonstration value than a place where entrepreneurship is already prevalent.

The fifth source motivating entrepreneurship policy is sunk costs. This refers to costs which are sunk not by entrepreneurs but rather by people, firms and organizations in a particular community, city or region. One aspect involves investments in fixed assets, such as real estate or infrastructure. A different aspect involves the human and dimension of linkages, networks and relationships with people at the particular location. By the very nature of sunk costs, it would be impossible, or at least not trivial, to replicate or replace those human connections simply by moving to a different location. A third aspect involves the emotional attachment people can develop to a particular place, which may not be replicable simply by moving.

In *Exit, Voice and Loyalty*, Hirschman (1970) explains that decision makers will exit from a situation where they are unable to exercise voice, or influence. However, loyalty will keep them from exiting. In the case of a city or region, decision makers with sunk costs have a collective interest in facilitating growth-inducing entrepreneurship, since leaving that place

would incur non-recoverable costs. A rich and compelling case study literature documents how the policy mandate for entrepreneurship across a broad spectrum of city and regional contexts coalesced from a community of disparate firms, nonprofit organizations and citizens. For example, Link (1995) shows how a coalition of civic, government and business leaders formed the mandate to create Research Triangle Park in North Carolina, and Walshock and Shragge (2013) show how entrepreneurship policy in San Diego resulted from collective action by civic and business leaders.

4 Who becomes an entrepreneur and why?

In this section, we present empirical evidence which shows that the policy efforts that we *generally* see implemented are an inefficient and ineffective way of promoting outcomes that we care about because of who typically becomes entrepreneurs and why people typically becomes entrepreneurs.

4.1 Most people would be better off **not** becoming entrepreneurs

First, we reiterate the three central tenets of good entrepreneurship public policy. Entrepreneurship policies would be clearly motivated if;

- Lots of people are trapped in jobs at established businesses who would be better off self-employed;
- We as a society are worse off because of this;
- More policies like the ones we have would correct this social problem.

In this section, we will address the first two points, while the third point is discussed in Sect. 6. This section will show that neither one of the two first points is true, that is, there are *not* a lot of people trapped in jobs who would be better off self-employed, and our society will *not* be better off if more people leave employment for entrepreneurship.

The first evidence represents a stylized empirical fact that has been hard to disprove; that most people are economically better off staying employed rather than becoming an entrepreneur. Figure 1 shows an early and clear example which shows four earnings distributions, where three of them are different types of measures of earnings from self-employment, and

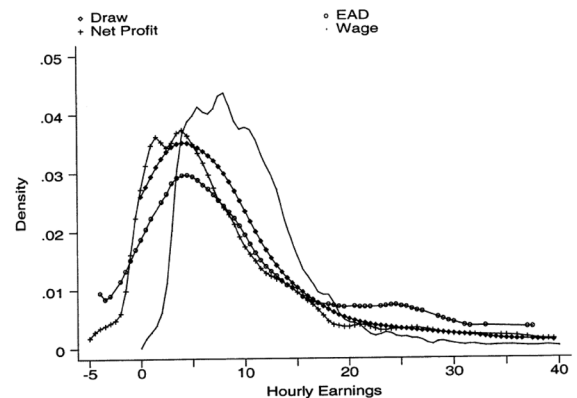


Fig. 1 Density of earnings for US wage earners and the self-employed. From Hamilton (2000, Fig. 1)

the fourth is the earnings from wage work.³ Wage earnings are the solid line. The data were taken from the USA in the mid-1980s and represent a stratified random sample of the population of income earners (Hamilton 2000).

Figure 1 clearly shows that all three measures of self-employment earnings have most of their density shifted to the left of the solid line wage earnings distribution. While there can be differences in background observable and unobservable characteristics between the two different groups, when Bart Hamilton controls for such differences, there still remains a significant negative difference in earnings for the average individual between self-employment and wage work. For example, Hamilton computes that the accumulated earnings for an average self-employed person for about 20 years would be 35 % less than if he would have stayed employed. This work has since been replicated several times across a number of different countries, and the typical “entrepreneurial discount” has been estimated between 5 and 15 % per year, which is a substantial annual penalty for becoming and staying an entrepreneur (for reviews, see Åstebro 2012; Åstebro and Chen 2014).

One might raise at least three counter-arguments to the usefulness of the above data for guiding public

³ The take-home or “draw”, the profits based on the annual report, or the equity-adjusted draw “EAD” which adds to the draw the estimated change in the value of the equity of the business.

policy. The first is that it is not the earnings of the self-employed which we as a society care about, but the earnings (and employment) potential of the people which become “novel” entrepreneurs, as discussed in Sect. 3, however defined.⁴ As we will show, it is clearly the case that if one examines a representative cross section of self-employed the typical “entrepreneur” is a sole proprietor with no other employees and who is working in a relatively mature and competitive industry such as the trades (e.g., construction), small-scale services, or who owns a restaurant or a retail business.

A second counter-argument is one of faulty measurements. It could be that since the data from Hamilton are cross sectional it does not represent well-calculated deliberate decisions to enter entrepreneurship, but rather a lot of “noise” and that earnings rise with time in entrepreneurship as those who has entered on mistaken grounds quickly exit.

A third argument is similar to the second, and it makes the claim that novel entrepreneurial earnings are much larger if one takes into account earnings which are not reported to the tax authorities and similarly not reported in surveys.

We will postpone a discussion on the types of businesses which people typically start until Sect. 4.3. However, we immediately note that if one implements a general entrepreneurship-friendly policy, then one obtains a response to this policy primarily from people starting the types of businesses which Hamilton’s study represents.

In order to indicate the earnings of novel entrepreneurs who base their new firms on intellectual property, Åstebro et al. (2013, 2015) examined the earnings of former academics in Sweden and the USA which decided to become full-time entrepreneurs. These represent the types of entrepreneurs one may care more about for the creation of wealth—they are likely to have created an invention at their university employer and are trying to commercialize this invention through an entrepreneurial act. In addition, they leave their former employer and become full-time entrepreneurs, so this is not a trivial decision. They typically forego a steady and well-paid job for the prospects of making something new under high uncertainty. Consulting or other part-time efforts are

not included and so if entrepreneurial earnings appear, they are more likely to be large. Finally, academic institutions and universities have hosted inventors creating some of the most important inventions for society who in some cases have gone on to commercialize the inventions themselves, for example Herbert Boyer co-discovering genetic engineering and co-founding Genentech while his partner Stanley Cohen returned to the laboratory, and Craig Venter founding Celera Genomics to commercialize gene sequencing.

Figure 2 draws similar types of density functions as in Fig. 1. The figure shows the annual earnings from a representative sample of academics in the USA with Ph.D.s from Science, Technology, Engineering or Medicine (STEM) who either stay in academia all their life (the red line) or at some point in time leave their employer to become an entrepreneur (the blue line). Data are from the SESTAT database collected by the National Science Foundation through repeated surveys between 1993 and 2006, and the graph is found in Åstebro et al. (2015).

The story is not different from this specially created sample of top-potential earning entrepreneurs than for the self-employed in general. The academic entrepreneurs typically make a lot less money than those which remain employed. The estimated (individual fixed effects) earnings difference for a given person is around 15 % less when becoming an entrepreneur. The data are very similar when looking at Swedish academic entrepreneurs similarly defined. For the Swedish data, Åstebro et al. (2013) had the unique opportunity to also collect data on dividends and earnings from sales of their businesses. These additional earnings were inconsequential and did not change the general tendency of academics to earn more if they stayed employed.

Addressing the second concern which claimed that we are mis-measuring the earnings potential of entrepreneurs in both above-reported studies by including a lot of short-term business, in the third graph we report on a study which compared earnings for the self-employed who had been in business for at least 10 years to the earnings of wage workers in Denmark. The figure is taken from Åstebro et al. (2014) and is reproduced below as Fig. 3. The figure also clearly shows that even if one excludes those who may have made a mistake by entering and quickly leave self-employment to go back to wage work, the earnings for the remaining self-employed

⁴ Sometimes called “true” or “real” or “high-growth”, or (bizarrely) “gazelles”.

Fig. 2 Probability density functions of earnings for those moving to entrepreneurship from academia (*blue line*) and wages for those staying in academia (*red line*) (1993 US dollars). *Source* Åstebro et al. (2015). (Color figure online)

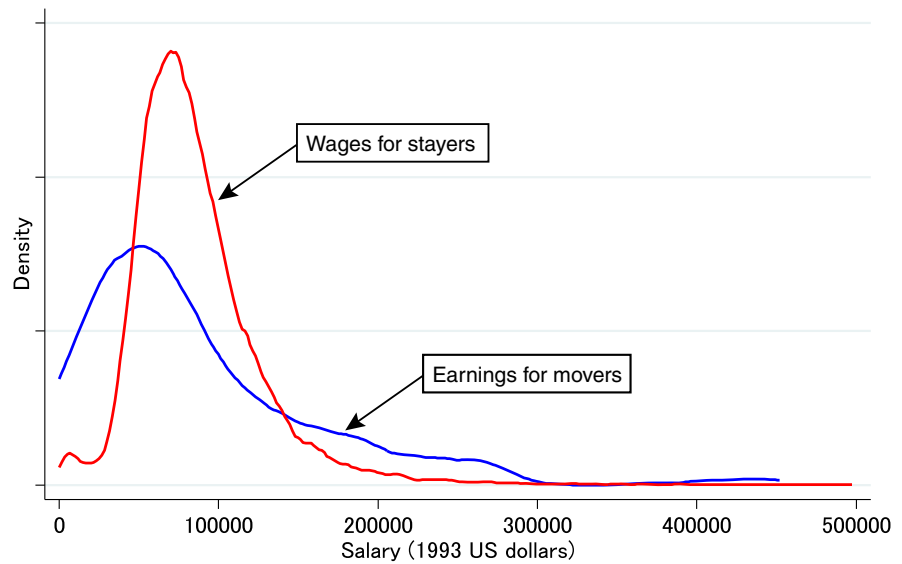
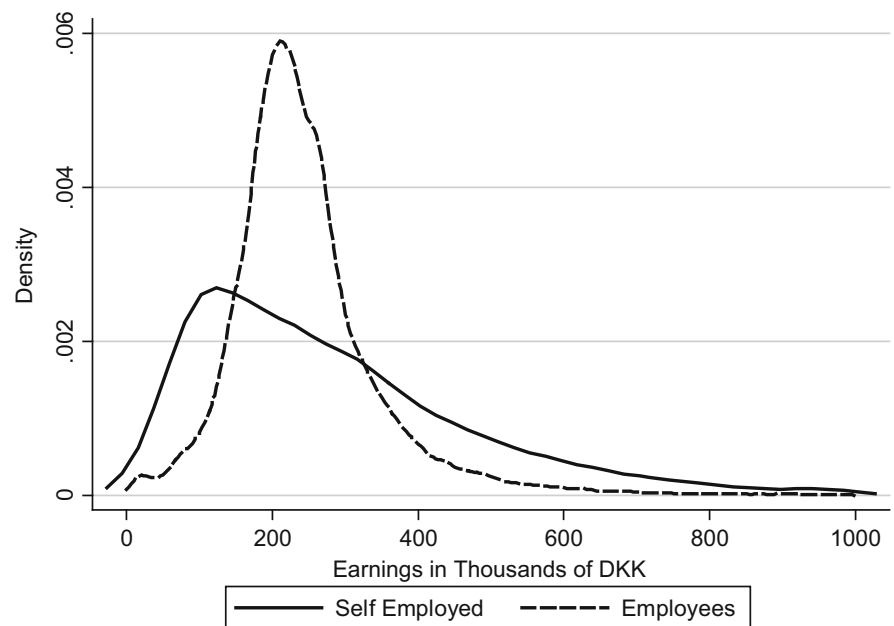


Fig. 3 Annual earnings in thousands of Danish Kroner for self-employed (*solid line*) with at least 10 years of business operations and wage workers (*dashed line*). From Åstebro et al. (2014)



are still predominantly less than the earnings for those in wage work.

This graph provides an additional interesting point which we will return to in the next subsection. Even though the expected utility of entrepreneurship appears less than the alternate wage work, the median income is clearly less, people persist in entrepreneurship, even

after 10 years. Why would they persist? By the time they have been in business for 10 years, it surely must be obvious to them that they could make more money by working for someone else.

The final argument against using all these data for policy purposes is that income may be severely underreport by entrepreneurs but not by wage workers.

Comparing reported earnings may then not be meaningful. Indeed, several papers have estimated that entrepreneurs underreport their income by between 10 and 40 % (see review in Åstebro and Chen 2014). However, even though people apparently can more easily hide income from the tax man by becoming entrepreneurs, the policy conclusions from these findings are not necessarily that it is a good idea to encourage people to become entrepreneurs. Indeed, this would make for very bizarre public policy. Take, for example, Greece, which has the highest rate of self-employment in the E.U. and also the largest difficulty of collecting taxes owed from these self-employed. It is not at all obvious that the remedy to the financial and economic problems in Greece is to encourage greater self-employment rates. Instead, one might argue that these results indicate that there are even greater opportunities to collect tax from entrepreneurs than what is typically accomplished (and in particular in Greece). Several papers also show that larger companies and entrepreneurs which start incorporated firms are likely to underreport their income substantially less than small sole proprietorships arguably due to the more detailed scrutiny of accounts in corporations (Engström and Holmlund 2009; Schuetze 2002), suggesting that tighter financial auditing of entrepreneurs may in fact be motivated.

Overall, the earnings data paint a picture of people behaving as if they were playing poker at the casino. Most lose money, but there is a small percentage of people that make a whole lot more money as entrepreneurs than they would as wage workers. A policy conclusion from these data is that subsidizing entrepreneurship would be like collecting taxes so we could give out free poker chips to encourage more people to play poker. This does not look like sound public policy.

4.2 People choose to become entrepreneurs predominantly because they like it

In the previous section, we showed evidence that most people are not better off becoming entrepreneurs. An immediate question following this evidence is: Why do people then become entrepreneurs? In this section, we will present compelling evidence, indicating that one of the most prominent explanations is that a lot of people *like to become/be entrepreneurs*. A preference for entrepreneurship immediately explains why people

enter into entrepreneurship although they will be making less money—they simply trade off lower income for higher consumption utility.

We start by showing that there is a strong preference for becoming an entrepreneur. In fact, there are substantially greater fractions wanting to be entrepreneurs than the actual rates of self-employment across a wide variety of countries. The proportion of citizens who favor being an entrepreneur over wage worker vary from 80 to approximately 30 % (Blanchflower 2004, Table 7).⁵ Poland, Portugal and the USA topped the league in 1997/1998, with roughly three quarters of citizens preferring to be entrepreneurs. These proportions seem extraordinarily large and cannot be motivated only by earnings opportunities. In the bottom of the league come Scandinavian countries. In these nations, roughly 30 % of citizens say they want to be an entrepreneur.

We continue by reporting that the preference for entrepreneurship is mostly driven by non-pecuniary reasons. Table 1 reproduces data reported by Hurst and Pugsley (2011) taken from the panel study of entrepreneurial dynamics, a survey conducted in 2006 representing a sample of “nascent” US entrepreneurs—those actively involved in the process of starting a business. Table shows percentages for the first reason given. There is direct evidence that people are mostly concerned about enjoying being an entrepreneur. The main reason for becoming an entrepreneur is various non-pecuniary motivations, while only 19.5 % reports making money as the main reason.

That non-pecuniary considerations dominate the decision to become entrepreneur is indirectly supported by several articles. For example, it is well documented that across a wide range of countries, self-employed are more satisfied with their work than wage workers (see Åstebro 2012 for references). Fixed-effect analysis shows that those who move to self-

⁵ The question in the International Social Survey Programme was formulated “*Suppose you were working and could choose between different kinds of jobs. Which would you prefer: being an employee or being self-employed?*” Information covers citizens from more than twenty countries surveyed between 1997 and 1998.

Table 1 Reasons for starting business

Reason	First reason (%)
Non-pecuniary motivation (I want to be my own boss; tired of working for others; flexibility; set my own hours; enjoy work...)	35.3
To generate income	19.5
Had A Good Business Idea/Create New Product	32.2
Lack of Other Employment Options	2.2
Other	10.8

Original Data Source Panel Study of Entrepreneurial Dynamics. Responses to question “Why do you want to start this business?”
Source Hurst and Pugsley (2011), Table 9

employment become happier. Further, using the unification of East and West Germany as a natural experiment, Benz and Frey (2008b) show that this result is not due to reverse causation (i.e., that more happy people enter entrepreneurship). Self-employed report they are more satisfied with their jobs because their work provides more autonomy, flexibility and skill utilization and (strangely) greater job security (Hundley 2001). Benz and Frey (2008a) discover that more interesting work and greater autonomy are mostly responsible for the difference in job satisfaction scores between entrepreneurs and employees.

Various types of data thus give a consistent opinion: People choose entrepreneurship primarily because they like it. There is absolutely nothing wrong with this. But supporting people who want to enjoy becoming entrepreneurs would be like taxing non-smokers so the government can buy cigarettes and give to people who enjoy smoking. This kind of policy does not make sense from a social welfare perspective. If people want to become entrepreneurs, they should do so without any subsidies collected from others.

4.3 Overwhelmingly entrepreneurs do not create any value beyond private benefits

Even if we have been able to convincingly show that most entrepreneurs would be better off staying employed, and most people enter entrepreneurship because they like to rather than to make money, it might be that entrepreneurs create a lot of social welfare (for others) even if they do not make much money for themselves. Take, for example, the two cases of Herbert Boyer and Craig Venter we discussed before. Even if they happened to get rich, there might be a plurality of entrepreneurs who do not get rich but where society got much better from their efforts. In

this section, we will show that this is an unlikely conclusion.

To illustrate that welfare gains from entrepreneurship are likely very small, we return to data compiled by Hurst and Pugsley (2011) from the panel study of entrepreneurial dynamics.⁶ We use answers regarding innovation and R&D activities to indicate the potential for welfare gains. Our point here is that if there are welfare gains from entrepreneurs, these would be most likely to appear if entrepreneurs innovate, as innovative activities are the most difficult to appropriate and which gains might more easily spill over to others. Authors have previously shown that small firms are proportionally more likely to innovate than large firms (the seminal work being Acs and Audretsch 1990), so this seems on the face of it a plausible argument.

However, it turns out that most entrepreneurs are unlikely to innovate or conduct R&D. Table 2 reveals that only a small fraction of entrepreneurs have produced a patent (4.9 %) or developed a proprietary technology (6.5 %), as part of their start-up activities. And rather surprising, only a quarter believes that R&D is a major priority for them. Instead, a rather large fraction (35.7 %) state when they enter that many existing firms already offer the same product or service to expected customer base. Many new firms are thus of a me-too character, simply imitating what is already in the market. The fractions which focus on innovation increases after 4 years of operations, indicating that successful entry indeed is associated with innovating. Nevertheless, R&D still does not weight heavily in the minds of the entrepreneurs and

⁶ Using the Kauffman Firm Survey, Hurst and Pugsley (2011) show that these results are not a function of the special sampling process in the PSED, but general to all startups.

Table 2 Innovation-related activities by nascent entrepreneurs

Indicator	First year (%)	Fifth year and positive revenues only (%)
Firm had applied for patent, copyright or trademark	4.9	17.6
Had developed proprietary technology	6.5	20.3
Owner stated that many existing firms already offer the same product or service to expected customer base	35.7	39.6
Expected R&D spending to be a major priority for the business	25.7	22.8

Original Data Panel Study of Entrepreneurial Dynamics. *Source* Hurst and Pugsley (2011), Tables 7 and 8

four out of ten firms still focus on providing me-too products.

A different approach of looking at the potential for spillovers is to examine the type of industries which the typical start-up enters into. If start-ups are more likely in high-tech industries, then maybe that would be an argument for supporting them with policies. We have already mentioned some of the most likely industries where entrepreneurs go into and so a more detailed analysis will bring no surprises. Hurst and Pugsley (2011) rank all 294 four-digit level industries in the USA by the fraction of firms within the industry which have <20 employees, a proxy for the intensity of entrepreneurship by industry. Their analysis shows that most small businesses are either restaurants, skilled professionals (physicians, dentists, lawyers, accountants, architects, consultants), skilled crafts persons (general contractors, plumbers, electricians, masons, painters, roofers), professional service providers (clergy, insurance agents, real estate agents), general service providers (auto repair, building services such as landscaping, barbers and beauticians) or small retailers (grocery stores, gas stations, clothing stores).

Maybe entrepreneurs are not very good at generating economic welfare, but they might be the source of most new employment? Indeed, studies have recently shown that it is primarily the new firms which generate most aggregate employment growth (Haltiwanger et al. 2013). However, Hurst and Pugsley (2011) provide some convincing evidence from the USA that, while aggregate job creation is higher among new firms, most new firms (with employees) create very little amount of new jobs. The point is that the distribution of job growth among new firms is highly skew and any policy aimed at stimulating the average entrepreneur would thus be ineffective.

Maybe the most interesting evidence they report is the following. Posed with the question in the PSED “Which of the following two statements best describe your preference for the future size of this new business: I want this new business to be as large as possible, or I want a size I can manage myself or with a few key employees?” only one-quarter of entrepreneurs answers that they want the business to be as large as possible.

We turn to some Swedish data to indicate the lack of job creation by entrepreneurs in general. The benefits of the Swedish data are that it can track employment in all new firms. Åstebro and Tåg (2015) show that in Sweden, 84 % of all entrepreneurs are sole proprietors, and among them, it requires 10 entrepreneurs to create one job for another person within the first 2 years of operations.⁷ Those entrepreneurs who start a limited liability firm have better employment growth in the first 2 years, creating 1.73 additional jobs. Unfortunately, only 16 % of all new firms are started as limited liability businesses, and employment in these firms retract to 0.36 additional employees per entrepreneur after 6 years of operations. The latter statistic reflects that the failure rates are high among these companies due to the inherent risk of entrepreneurship. See Table 3.

Unfortunately, we must therefore disappoint the policy maker also when it comes to job creation. Most new firms create no additional jobs beyond those for the entrepreneurs themselves. If these entrepreneurs in addition arrive from paid employment, then there is no

⁷ Source: Statistics Sweden, register-based data covering 2005–2009, reflecting the total labor force and 24.5 million year-individual observations. A firm closed during the period is counted as hiring zero employees.

Table 3 Most entrepreneurs create small non-growing firms

Number of people hired by founding entrepreneur	After 2 years	After 6 years
Sole Proprietorship (84 % of all)	0.10	0.09
Incorporated (16 %)	1.73	0.36

Original Data Statistics Sweden matched employee–employer register. *Source* Åstebro and Tåg (2015)

new net job creation, only a reshuffling of work. Of course, such reshuffling is part of the animal spirit of entrepreneurship and not a bad thing. But one should not look to the average entrepreneur as the giant job creator.

This section has shown that most entrepreneurs enter into highly contested markets, with products and services that are typically already offered, and where there is already a large supply present. Few new firms enter to innovate, and very few entrepreneurs hire anyone except themselves and have no interest or ability to expand after creating a job for themselves. In conclusion, supporting people to become entrepreneurs would mostly support one-man me-too shops in low-growth, low-margin industries where there is no or little innovation undertaken.

5 Well-intended public policies often go wrong

In the introduction, we argued that there were three prerequisites to any policy intervention: willing and able entrepreneurial talent stranded in wage employment; an economy made worse off as a result; and the ability of policy aimed at stimulating entrepreneurship to fix the problem. In this final section, we argue that even if the allocation of talent across the wage earning and the entrepreneurial sector is sub-optimal, even if we suffer collectively as a result, that there is little evidence that simple or proximate policy fixes have any efficacy. Instead, policies often backfire because economic agents are typically able to think several moves ahead of policy makers on the entrepreneurship chess board.

5.1 Labor markets

Consider first the fact that well-intended labor market interventions often have unintended and costly consequences. French labor market policy provides an

illustrative example. In an attempt to lower the administrative burden associated with complying with French labor union regulations, the French enacted a policy exempting organization with fewer than 50 employees. Figure 4, taken from Garicano et al. (2012), plots the firm size distribution as a function of the number of employees.

The figure clearly shows a spike in the number of 49 person firms, and an utter lack of 50 or 51 person firms. For the purposes of comparison, the figure also plots the US firm size distribution, which helps to illustrate the magnitude of the discontinuity induced by the policy.

The message from the graph is simple and is explored in detail in Garicano et al. (2012): don't cross the 50-person threshold, because the cost of hiring the 50th employee is not just that person's wages, but the entire fixed cost of compliance to a higher standard of labor regulation. The policy measure, ostensibly introduced to make economic life less burdensome for small business operators, creates an unintended valley of death for firms as they grow. Through their own optimal choices, business owners effectively become pinned behind the 50-person barrier until they grow far enough beyond the threshold to amortize the fixed cost of policy compliance over a much larger labor base. Garicano et al. (2012) suggest that the cost of this policy is on the order of a 5–10 % increase in overall wages at these firms.

5.2 Capital markets

Moving from labor markets to capital markets, consider first the banking sector. Robb and Robinson (2014) show that formal bank lending is a critical source of financing for new businesses (not just small ones). Given the importance of the banking sector for the small business and young business economy, it is perhaps not a surprise that the US Small Business Administration provides a loan guarantee program

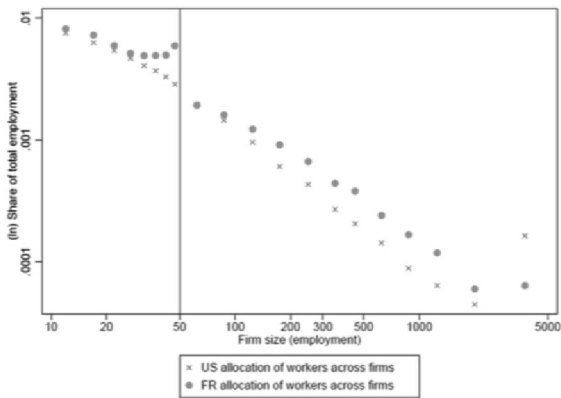


Fig. 4 Firm size distribution in the USA and France. Taken from Garicano et al. (2012)

aimed at stimulating bank lending to the small business sector.

The SBA 7A loan program operates as a guarantee program: Banks make loans but if the loans conform to the eligibility criteria for the SBA, the SBA guarantees the loan in the event of default. Given that the ostensible role of the program is to facilitate the extension of loans to a cohort that might not otherwise qualify for a traditional bank loan, one might reasonably expect these loans to command higher interest rates.

de Andrade and Lucas' (2009) analysis of SBA loan spreads interest rate spreads, and corresponding default rates on SBA confirm this intuition. They find that between 1998 and 2006, SBA 7a loans were around 2 % over the prime lending rate. As Fig. 5 illustrates, SBA 7A Express loans were anywhere from 2.5 to 4 % higher.

Although it is reasonable to assume that these loans are more expensive for banks to service, the question is whether default rates or other costs justify the higher interest rates. Their analysis suggests not. As Fig. 6 illustrates, they find that default rates on SBA loans hover between BBB and BB corporate loans, in spite of costing much more in terms of interest costs.

In light of the vast literature on the importance of relationships in banking for facilitating information transmission between borrowers and lenders, and the attendant switching costs that obtain in such environments, an extreme interpretation of these findings would be that the well-intentioned effort to stimulate lending to underserved small business borrowers created information monopolies for lenders servicing

SBA-qualified lenders, allowing them to earn super-normal rents on the loans they extend to borrowers that would otherwise be screened out from the market.

Banking markets are not the only capital markets in which well-intentioned policy efforts can backfire. Cumming and MacIntosh's (2006, 2007) analysis of the Canadian government's attempts to stimulate the amount of venture capital in Canada provides an illustrative example. In an attempt to stimulate the amount of venture capital flowing to Canadian innovators, the Canadian government initiated a labor-sponsored investment fund or labor-sponsored venture capital corporations (LSVCCs)—a fund in which private individuals could make individual contributions, much like to mutual funds, but which invested in private companies. These funds are closely related in structure to the Venture Capital Trusts (VCTs) seen in the UK (Cumming 2003). As Fig. 7 illustrates, Cumming and MacIntosh (2007) find that these funds dramatically underperform relevant benchmark returns and that they suffer from unusually high fees (with management expense ratios averaging at 4 %, they exceed the most expensive venture capital funds). The culprit, as with VCTs, appears to be the peculiar governance structure under which they are required to operate (Cumming and MacIntosh 2007). Their ultimate conclusion is that the tax subsidies to individuals that underpin the creation of LSVCCs actually crowded out private capital to Canadian start-ups (Cumming and MacIntosh 2006). Thus, this is more evidence of policy backfire.

Canada's and the UK's efforts to stimulate venture funding illustrate a common problem faced by policy makers, which is the tendency to formulate policy ex post based on observed outcomes without regard to the unobservable ex ante characteristics of the distribution that led to those outcomes. Policy makers want more Facebooks and Googles, and so they encourage tinkering in garages, but in so doing they fail to recognize that most new ideas are bad ideas, not good ones. Much of capital market policy intended to stimulate entrepreneurship works to create more needles by encouraging more haystacks.

If there is an underlying economic reasoning that connects these examples, it would be that policy to promote entrepreneurship too often operates on partial equilibrium assumptions. That is, policy makers observe a market equilibrium with which they are reasonably dissatisfied and attempt to correct it, but

Interest Rate Spread (%) above the PRIME Rate for SBA 7(a) Loans and for Commercial & Industrial Loans (by Cohort) - 1988 to 2006

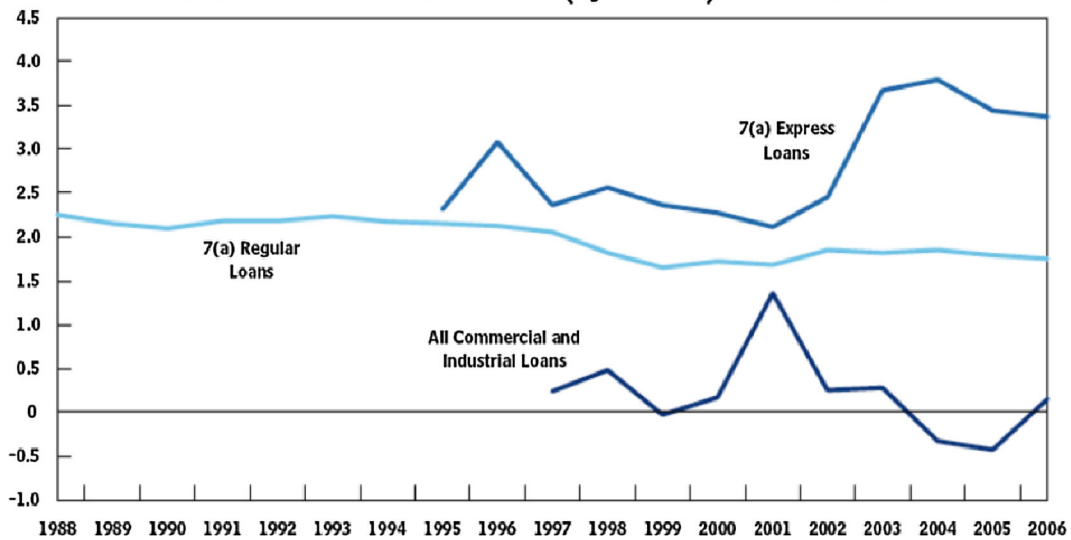


Fig. 5 Interest rate spreads on SBA-backed loans compared to other business loans. Taken from de Andrade and Lucas (2009)

Cumulative Default Rates: SBA 7(a) Loans and S&P Corporate Bonds

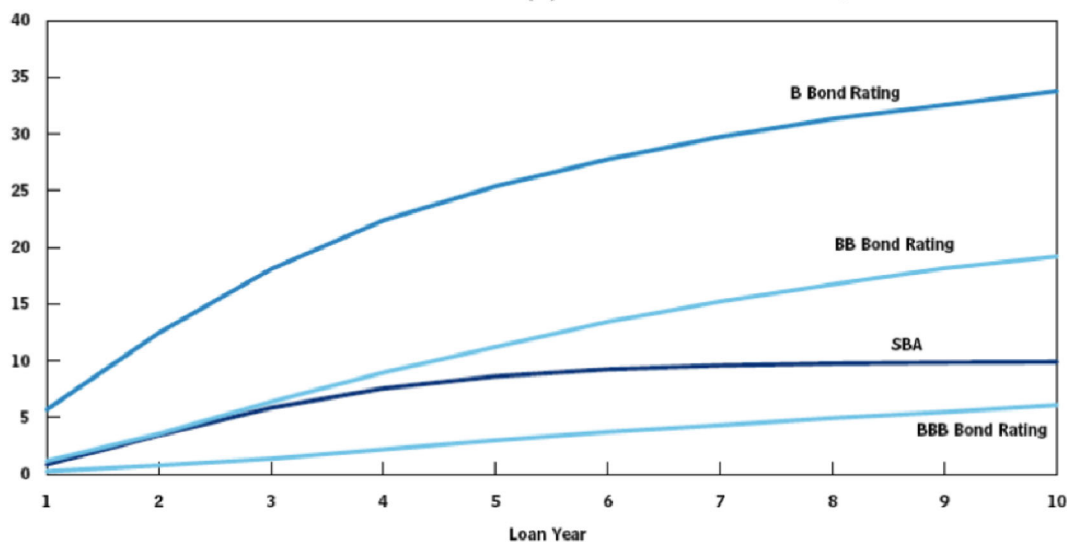


Fig. 6 Cumulative default rates on SBA loans. Taken from de Andrade and Lucas (2009)

their policy fails to account for the fact that economic agents will re-optimize in the presence of the new policy. As a result, the policy backfires. Just as the British Raj' attempt to eliminate cobras by offering a bounty for every dead cobra backfired by creating a thriving market for baby cobras (which were then subsequently released into the streets and gutters when

the bounty was rescinded, compounding the problem it was intended to solve), most attempts to stimulate entrepreneurship through narrow policy stimulus backfire because they fail to internalize the incentives they create. It would seem that "ordinary" economic agents understand the Lucas critique (Lucas 1976) better than policy makers do.

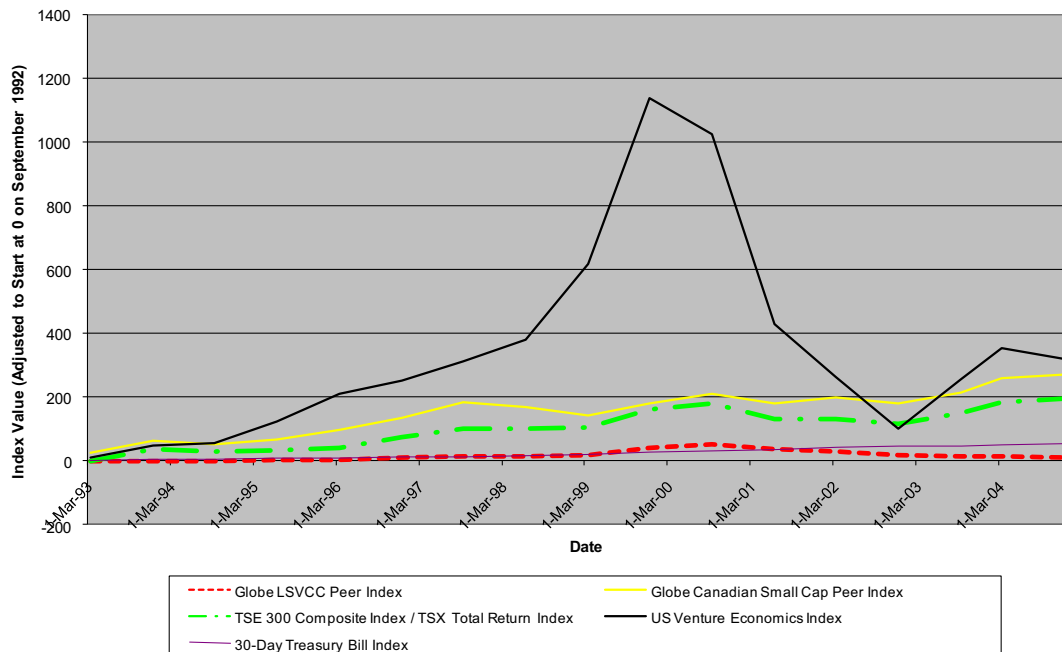


Fig. 7 Performance of LSVCCs relative to other benchmarks. Taken from Cumming and MacIntosh (2006)

6 Conclusions

This paper is a debate about whether there is a strong motivation for public policies to stimulate more people to enter entrepreneurship and self-employment. The debate captured in this article is structured around a policy litmus test: For policy interventions aimed at stimulating entrepreneurship to be warranted, there should be evidence of the need for more entrepreneurs, evidence of harm to society from the undersupply of entrepreneurs, and evidence that policy interventions can correct the problem.

With this litmus test, we can summarize our debate as follows. One author argues that this litmus test should be rejected because entrepreneurship, as opposed to self-employment or small business activity, is essential for creating new markets and new products that would not exist but for the ingenuity and panache of the entrepreneur. Building on this, one author argues that spatial externalities in entrepreneurial ecosystems constitute de facto market failures that compel us to act. In contrast, one author argues that there is little empirical evidence supporting the idea that society is harmed by the purported lack of entrepreneurship, and one argues that even if it were, there is little in the way of historical evidence to

suggest that previous policy interventions have worked when they have been aimed directly at stimulating self-employment, and thus, little reason to think they will in the future.

This is not to say that bad policy decisions do not impede entrepreneurship. Nor is it to say that well-informed (as opposed to well intentioned) policy initiatives would not impact society in positive ways. Our claim is that the interventions required are likely not to sound like entrepreneurship policy. Consider the debate in the USA regarding health care. Decoupling the provision of health insurance with employment is likely to remove a distortion in the self-employment decision that prevents people with good ideas but costly medical issues from leaving paid employment to start new businesses. Evidence from Fairlie et al. (2011, 2016) suggests that this distortion could be sizeable. But policy initiatives like this do not sound like entrepreneurship policy when they are described in the press: They are packaged as healthcare initiatives. Likewise, greater STEM education and better access to STEM education among women and minorities would likely produce more engineers. Some of these engineers would no doubt go on to launch innovative new businesses; others would no doubt work at these businesses. But this is not often

thought of as entrepreneurship; it is education policy. Labor market reform to encourage hiring immigrants in jobs they have been educated for would reduce inefficient allocation of talent to entrepreneurship. This is not entrepreneurship policy, this is immigration reform. Indeed, if we accept that entrepreneurship is a deeply ingrained feature of many Western economies, we should not be surprised that successful policy measures will likely involve subtle and pervasive policy initiatives that have the unintended consequence of changing people's minds about the costs and benefits of entrepreneurship.

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References

- Acs, Z. (2009). Competition, innovation and antitrust: A theory of market leaders and its policy implications. *Journal of Economic Literature*, *XLVII*, 208–210.
- Acs, Z., & Audretsch, D. B. (1990). *Innovation and small firms*. Cambridge, MA: The MIT Press.
- Acs, Z. J., Audretsch, D., Braunerhjelm, P., & Carlsson, B. (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economic*, *32*(1), 15–30.
- Acs, Z. J., Stenholm, P., & Wuebker, R. (2013). Exploring country level institutional arrangements on the rate and type of entrepreneurial activity. *Journal of Business Venturing*, *28*(1), 176–193.
- Acs, Z. J., Szerb, L., & Autio, E. (2014). National systems of entrepreneurship: Measurement issues and policy implications. *Research Policy*, *43*, 476–494.
- Arrow, K. (1962). Economic welfare and the allocation of resources for invention. In R. R. Nelson (Ed.), *The rate and direction of inventive activity*. Princeton: Princeton University Press.
- Åstebro, T. (2012). Returns to entrepreneurship. In D. Cummins (Ed.), *Handbook of entrepreneurial finance* (pp. 45–108). New York: Oxford University Press.
- Åstebro, T., Braguinsky, S., Braunerhjelm, P., & Broström, A. (2015). Academic Entrepreneurship: Bayh-Dole versus the 'Professor's Privilege'. Available at SSRN: <http://ssrn.com/abstract=2677283>.
- Åstebro, T., & Tåg, J. (2015). Entrepreneurship and Job Creation. IFN Working Paper No. 1059. Available at SSRN: <http://ssrn.com/abstract=2576044>.
- Åstebro, T. (forthcoming). The private financial gains to entrepreneurship: Is it a good use of public money to encourage individuals to become entrepreneurs? *Small Business Economics*.
- Åstebro, T., Bazzazian, N., & Braguinsky, S. (2012). Startups by recent university graduates and their faculty: Implications for university entrepreneurship policy. *Research Policy*, *41*, 663–677.
- Åstebro, T., Braunerhjelm, P., & Broström, A. (2013). The returns to academic entrepreneurship. *Industrial and Corporate Change*, *22*(1), 281–311.
- Åstebro, T., & Chen, J. (2014). The entrepreneurial earnings puzzle: Mismeasurement or real? *Journal of Business Venturing*, *29*(1), 88–105.
- Åstebro, T., Herz, H., Nanda, R., & Weber, R. A. (2014). Seeking the roots of entrepreneurship: Insights from behavioral economics. *Journal of Economic Perspectives*, *28*(3), 49–70.
- Baumol, W. J. (1968). Entrepreneurship and Economic Theory. *American Economic Review*, *58*(2), 64–71.
- Baumol, W. J. (2002). *The free market innovation machine*. Princeton: Princeton University Press.
- Baumol, W. J. (2007). *Good capitalism bad capitalism and the economics of growth and prosperity*. New Haven: Yale University Press.
- Benz, M., & Frey, B. S. (2008a). Being independent is a great thing: Subjective evaluations of self-employment and hierarchy. *Economica*, *75*(298), 362–383.
- Benz, M., & Frey, B. S. (2008b). The value of doing what you like: Evidence from the self-employed in 23 countries. *Journal of Economic Behavior and Organization*, *68*(3–4), 445–455.
- Blanchflower, D. (2004). Self-employment: More may not be better. *Swedish Economic Policy Review*, *11*(2), 15–74.
- Cumming, D. J. (2003). The structure, governance and performance of UK venture capital trusts. *Journal of Corporate Law Studies*, *3*, 401–427.
- Cumming, D., & MacIntosh, J. (2006). Crowding out private equity: Canadian evidence. *Journal of Business Venturing*, *21*(1), 569–609.
- Cumming, D., & MacIntosh, J. (2007). Mutual funds that invest in private equity: An analysis of labour-sponsored investment funds. *Cambridge Journal of Economics*, *31*(3), 445–487.
- de Andrade, F., & Lucas, D. (2009). "Why Do SBA Loans Cost Borrowers So Much?" Working Paper, Northwestern University and MIT.
- Engström, P., & Holmlund, B. (2009). Tax evasion and self-employment in a high-tax country: Evidence from Sweden. *Applied Economics*, *41*(19), 2419–2430.
- Fairlie, R., Kapur, K., & Gates, S. (2011). Is employer-based health insurance a barrier to entrepreneurship. *Journal of Health Economics*, *30*(1), 146–162.
- Fairlie, R., Kapur, K., & Gates, S. (2016). Job-lock: Evidence from a regression discontinuity design. *Industrial Relations*, *55*(1), 92–121.
- Garicano, L., LeLarge, C., & van Reenen, J. (2012). *Firm size distortions and the productivity distribution: Evidence*

- from France. Washington, London: Center for Economic Policy, London School of Economics.
- Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics*, 95(2), 347–361.
- Hamilton, B. (2000). Does entrepreneurship pay? An empirical analysis of the returns to self-employment. *Journal of Political Economy*, 108(3), 604–631.
- Hirschman, A. O. (1970). *Exit, voice and loyalty: Response to decline in firms, organizations and states*. Cambridge, Mass: Harvard University Press.
- Hundley, G. (2001). Why and when are the self-employed more satisfied with their work? *Industrial Relations: A Journal of Economy and Society*, 40(2), 293–316.
- Hurst, E., & Pugsley, B. (2011). What do small businesses do? *Brookings Papers on Economic Activity*, 43(2), 73–142.
- Kirzner, I. (1973). *Competition and Entrepreneurship*. Chicago, IL: University of Chicago Press.
- Klepper, S. (2016). *The nanoeconomics of American high-tech industries*. Princeton: Princeton University Press.
- Leibenstein, H. (1968). Entrepreneurship and development. *American Economic Review*, 58(2), 72–83.
- Lerner, J. (2009). *Boulevard of broken dreams: Why public efforts to boost entrepreneurship and venture capital have failed—and what to do about it*. Princeton: Princeton University Press.
- Li, H., de Zubielqui, G. C., & O'Connor, A. (2015). Entrepreneurial networking capacity of cluster firms: A social network perspective on how shared resources enhance firm performance. *Small Business Economics*, 45(3), 523–541.
- Link, A. N. (1995). *A generosity of spirit: The early history of the research triangle park*. Research Triangle Park: Research Triangle Foundation of North Carolina.
- Lucas, R. (1976). Econometric policy evaluation: A critique. In K. Brunner & A. Meltzer (Eds.), *The phillips curve and labor markets. Carnegie-Rochester conference series on public policy* (Vol. 1, pp. 19–46). New York: American Elsevier.
- Mansfield, E. (1991). Social returns from R&D: Findings, methods and limitations. *Research-Technology Management*, 34(6), 24–27.
- Parker, S. C. (2007). Policymakers beware. In D. B. Audretsch, I. Grilo, & A. R. Thurik (Eds.), *Handbook of research on entrepreneurship policy* (pp. 54–63). Cheltenham: Edward Elgar.
- Plummer, L., & Acs, A. J. (2014). Localized competition in the knowledge spillover theory of entrepreneurship. *Journal of Business Venturing*, 29(1), 121–136.
- Robb, A. M., & Robinson, D. T. (2014). The capital structure decisions of new firms. *Review of Financial Studies*, 27(1): 153–179.
- Saxenian, A. (1994). *Regional advantage: Culture and competition in silicon valley and route 128*. Cambridge: Harvard University Press.
- Schuetze, H. J. (2002). Profiles of tax non-compliance among the self-employed in Canada: 1969 to 1992. *Canadian Public Policy-Analyse De Politiques*, 28(2), 219–238.
- Shane, S. (2009a). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33(2), 141–149.
- Shane, S. (2009b). *The illusions of entrepreneurship: The costly myths that entrepreneurs, investors, and policy makers live by*. New Haven: Yale University Press.
- Stenholm, P., Acs, Z. J., & Wuebker, R. (2013). Exploring country level institutional arrangements on the rate and type of entrepreneurial activity. *Journal of Business Venturing*, 28, 176–193.
- Walshock, M., & Shragge, A. J. (2013). *Invention and reinvention: The evolution of San Diego's entrepreneurial economy*. Palo Alto: Stanford University Press.