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# Muppets and gazelles: political and methodological biases in entrepreneurship research

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Paul Nightingale\* and Alex Coad\*\*,<sup>†</sup>

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Despite an almost universally accepted belief outside academia that entrepreneurial activity is a positive driving force in the economy, the accumulated evidence remains largely inconclusive. This article positions the increased interest in entrepreneurship since the 1980s within its historical context and highlights the significant methodological problems with its analysis. Taking these problems into account it reevaluates the performance of entrepreneurial firms in terms of innovation, job creation, economic growth, productivity growth, and happiness to show how both positive and negative interpretations can emerge. A pattern of increasingly positive interpretation is observed as one moves from analysis to policy. To address this bias, the article suggests the single category “entrepreneurial firms” be broken up along a continuum from the large number of economically marginal, undersized, poor performance enterprises to the small number of high performance “gazelles” that drive most positive impact on the economy. This would allow a more realistic evaluation of the impact of entrepreneurs by avoiding a composition fallacy that assigns the benefits of entrepreneurship to the average firm.

**JEL classification:** L26, M13, J24.

*“He who makes ‘the desert bloom’ is often a very colorful person; a study of him in consequence is likely to turn into a romantic product . . . Cold-blooded appraisals of the role of the entrepreneur in economic development are rare: glorification is usual.”*

G. H. Evans (1949, p. 337).

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## 1. Introduction

One of the most prominent discoveries in industrial dynamics over the past 20 years has been the extent of the skewed distribution of new firms' impact on the economy (Storey, 1998). A small proportion of high-performing firms drive the majority of innovation, wealth creation, and new job generation, while most firms, including the median small business and the median start-up, have only a marginal impact (Davidsson, 2007). This article is about why those latter firms' consistently poor performance has been overlooked and what a more realistic understanding implies for entrepreneurship and industrial policy. As the article will highlight, understanding about the role of entrepreneurial start-ups has been distorted by a mixture of demand-side biases in favor of entrepreneurs and supply-side methodological problems caused by their skewed impact, high death rates (survival bias), and poor quality data.

Understanding such firms is important because despite an almost universally accepted belief outside academia that entrepreneurial firms are beneficial to the economy, the accumulated evidence reviewed in this article is ambiguous at best and sometimes suggests otherwise. Analyzing the impact of new market entrants is methodologically demanding, which means that much research remains inconclusive, allowing both positive and negative interpretations. The methodological problems tend to create an upward bias, with the result that over time as the quality of data has improved and methods have become more robust, economists have been led to more sober evaluations (Hamilton, 2000; Moskowitz and Vissing-Jorgensen, 2002; Hall and Woodward, 2010). Nonetheless, policymaking in most countries remains almost universally positive and provides a ready market for research that assumes more entrepreneurial activity is "a good thing."

This positive perception can be seen in the prominent position of entrepreneurial firms in political culture. Entrepreneurship has been highlighted by a succession of US leaders. President Obama recently highlighted how "*America's small businesses have created 65 percent of all new jobs . . . And more than half of all Americans working in the private sector are either employed by a small business or own one—more than half. These companies are the engine of job growth in America. They fuel our prosperity . . .*"<sup>1</sup> President Bush II similarly highlighted "*We often think of pioneers as those hardy settlers who tamed the American frontier . . . However, small business people also stand among our Nation's greatest pioneers. They, too, are men and women of vision. They, too, have the courage to take risks and the willingness to make their ideas work. Industrious and self-reliant, small business men and women continually lead the way in*

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<sup>1</sup>Remarks by the president on small business initiatives, Metropolitan Archives, Landover, Maryland, October 21, 2009. While as a senator he said. "*Small businesses are the backbone of our nation's economy and we must protect this great resource. It is time to end the diversion of federal small business contracts to corporate giants.*" <http://www.barackobama.com>, The American Small Business League Endorses Barack Obama, February 26, 2008

*the development of new technology and products and in the creation of economic opportunity for all Americans. Indeed, small business is the lifeblood of America's free enterprise system. It is within this vital sector of our economy that most workers find their first jobs and training. Small businesses account for two out of every three new jobs created in the United States.*" Previous presidents were equally supportive.<sup>2</sup>

The position is similar in other countries. A UK government minister, for example, recently claimed that firms with fewer than five employees are responsible for 95% of all radical innovations. This belief in entrepreneurship as a potential solution to unemployment, economic growth, regional development, and innovation leads to substantial levels of public support. Looking at UK data, Storey (2006: 248) estimates that "the annual total financial support for small business is equivalent to a public expenditure of GBP 7.9 billion . . . To contextualize that expenditure, each year the UK spends more taxpayers' money on small businesses than it spends on the police force" or universities at GBP 7 billion each.

As the rest of the article will show, it is not clear that this level of subsidy or political support is justified. A more considered perspective suggests that rather than entrepreneurial market entry being a universally good thing, the evidence for positive impact is at best weak and highly skewed by atypical firms. Even taking into account these atypical firms, new small firm jobs are more volatile, less productive and less well-paid, have fewer benefits, and have higher rates of accidents. Entrepreneurial firms are less innovative, less productive, and do not seem to be associated with GDP growth. While self-employed individuals are happier and start-ups contribute to job creation *in their first year*, that impact is positive by construction and it does not follow that more market entry should be encouraged, or that more new firms will generate new jobs. There may well be *excessive* entrepreneurship if public policy encourages market entry to the point that markets become thin, the profits of higher quality firms are reduced so their growth is constrained, and a market for lemons is created for investors (Santarelli and Vivarelli, 2002, 2007).

To understand the reality of entrepreneurial market entry and account for the various biases involved requires an interdisciplinary approach that captures both the supply and demand for bias. To do this the rest of the article is structured as follows. Section 2 sets out the historical context surrounding the increased interest in entrepreneurship in the 1980s, which created new demand for research showing a positive impact. In doing so, it explains why entrepreneurship research is so influenced by a small group of Austrian school economists (see Landström *et al.*, 2012) despite their

<sup>2</sup>[George Bush Proclamation 6131, Small Business Week, 1990]. Clinton's A Record of Progress, similarly highlighted how "America's 25.5 million small businesses generate more than half of the nation's gross domestic product; represent 26 percent of America's exporters; create 80 percent of all the net new jobs in the United States; and employ 52 percent of the private sector work force." [Small Business Administration [http://clinton4.nara.gov/WH/Accomplishments/Small\\_Business.html](http://clinton4.nara.gov/WH/Accomplishments/Small_Business.html)]. We are grateful to John Haltiwanger with help in providing the US quotes.

earlier marginal influence. Section 3 explores some of the methodological problems in assessing this value to explain how the supply of research could match this demand and allow a positive view to persist. Section 4 reviews this literature in the light of more recent analysis to show how alternative interpretations are possible. Section 5 suggests some alternative ways of thinking about entrepreneurs that may help inform more realistic public policy, while Section 6 concludes.

## 2. The genealogy of entrepreneurship policy

For the majority of the 20th century, interest in entrepreneurs was limited (Landström *et al.*, 2012). Large firms had emerged in the late 19th century with higher levels of productivity and innovation (Chandler, 1990; Henrekson, 2005; Schumpeter, 1942). They generated extensive economies of scale, scope, and speed, allowing them to become global oligopolies, so that today 25% of the US population work in firms with >10,000 employees and only 16.6% in small firms with <20 employees (Bartelsman *et al.*, 2005; Haltiwanger *et al.*, 2010).

Schumpeter, for example, recognized this transformation and shifted his emphasis from entrepreneurs to the R&D departments of large firms. By 1942 (p. 106), he suggested “what we have got to accept is that the large-scale establishment has come to be the most powerful engine of progress and in particular of the long-run expansion of output.” Similarly, by the 1950s, Galbraith (1967: 86) was ridiculing the “no more pleasant fiction than that technological change is the product of the matchless ingenuity of the small man forced by competition to employ his wits to better his neighbor.”

Galbraith’s views reflect the strong postwar consensus about the importance of large firms within an economy characterized by Keynesian demand management, active industrial policy, rising welfare provision, and a commitment to global free trade (Hogan, 1989; Ruggie, 1982; Briggs, 1968). The underlying economic model involved governments cooperating with industrialists and unions to maintain demand and assist small numbers of large national-champion firms to exploit economies of scale in (protected) national markets (Dannreuther, 2009). Increased trade, the international diffusion of American production technology, favorable terms of trade for manufacturing nations, and low European oil prices diffused growth around the world. In the immediate postwar period, this generated the “Great Compression” in American wages (Goldin and Margo, 1992) and three decades of growth and low inflation (“*les trentes glorieuses*”) in Western Europe.

In the 1970s, this economic success came to an end. After the United States adopted an inflationary fiscal policy and ceased to support pegged exchange rates in 1971, the global economic system began to transmit inflation. Protected incomes exerted strong downward rigidity on prices, which undermined the effectiveness of economic management, with the result that attempts to control inflation by reducing

aggregate demand ended up cutting real output and increasing unemployment (Goldthorpe, 1984). The oil shocks, declining terms of trade, and increased international competition from the periphery, particularly after Japan was granted “most favored nation” status in the Kennedy round in 1967, made these problems worse. In the UK and France, attempts to stimulate demand led to capital flight, currency declines, industrial unrest, and in the case of the UK bail-outs from the International Monetary Fund (IMF). In the United States, the 1979 energy crisis, Iranian hostage crisis, and Soviet invasion of Afghanistan all contributed to a sense of loss of control and desire for an alternative economic model.

The election of Reagan and Thatcher marked the introduction of a new model of political economy, which drew on a small group of Austrian School economists, whose ideas had been propagated outside the academic mainstream in networks of think tanks. This new model was based on a *counterfactual* argument that better economic coordination could be achieved by large numbers of entrepreneurial small firms (not a small number of large firms), coordinated by market signals (not a consensus between governments, managers, and unions), competing in free international markets (not protected national markets) (Dannreuther, 2009). Having been largely ignored in policy debates, Small and Medium-sized Enterprises (SMEs) and entrepreneurs suddenly took center stage between 1979 and 1983, for example, the British free market Conservative government introduced 103 new policies to support them (Mason and Harrison, 1986). So Blanchflower and Oswald (1998) could highlight (p. 28) that they lived in “the era of the entrepreneur. After years of neglect, those who start and manage their own businesses are viewed as popular heroes.” This view was replicated across the Atlantic by Bradley and Roberts (2004: 38) who suggested “the contemporary period is the ‘era of the entrepreneur,’ in which the entrepreneur is viewed increasingly as a folk hero.” In a short period of time, entrepreneurs had gone from objects of ridicule to folk heroes.

### ***The Austrian roots of entrepreneurship research***

The roots of this new entrepreneurship-focused economic model trace back from implementation in the late 1970s, to Chicago in the 1950s, and back to Vienna in the 1930s (Judt, 2010: 13; Mirowski, 2007).<sup>3</sup> Its intellectual roots go back further and include Schumpeter’s (1911) *Theory of Economic Development*, and the earlier work of Friedrich von Wieser. Key individuals include Hayek, Popper, and Drucker (from Vienna), von Mises (from Lemberg), and Schumpeter (from Moravia), who still

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<sup>3</sup>Hebert and Link (2006, p393) classified entrepreneurial theories into three groups: the Austrian school, the German school (featuring Schumpeter, an Austrian), and the Chicago school, which was heavily influenced by the Austrians (see van Horn and Mirowski, 2009).

figure significantly in entrepreneurship citations (Landström *et al.*, 2012).<sup>4</sup> Their worldview was framed by the turmoil of the collapse of the Austro-Hungarian Empire, World War I, the Great Depression, banking crises, stagflation, economic dislocation, labor revolt, the establishment of “Red Vienna,” a civil war and then reactionary coup in 1934, and finally a Nazi invasion and World War II.

Rival interpretations of this history emerged. The dominant view was that governments had failed to generate enough Keynesian counter-cyclical market intervention, leading to a collapse in demand, large-scale unemployment, and social dislocation that produced a fertile breeding ground for extremist politics (see, e.g., the classic study of Jahoda *et al.*, 1971). The Austrian School’s alternative interpretation saw the disaster as a failure of state planning, where overactive governments misunderstood the limits of knowledge and overextended themselves to the point they invited totalitarian responses. Mainstream support for government interventions was therefore considered dangerously counterproductive. This interpretation drew on earlier European political thought (Mirowski, 2007) with Hayek’s distinction between a *cosmos* or spontaneous order and a *taxis* or purposive organization, Oakeshott’s distinction between *societas* or juridical rule and *universitas* or managerial rule, von Mises’s distinction between a *Rechtsstaat* or rule of law state and a *Wohlfahrtsstaat* or welfare state, Popper’s distinction between an *Open* or piece-meal, problem-solving society and a *Closed* or scientific-utopian society, all paralleling Schmitt’s distinction between a *Regierungsstaat* or governing state and a *Gesetzgebungsstaat* or law giving state (see Anderson, 2009: 25). All were ways of understanding the emergence of governments that intervened in the economy in the pursuit of equality and security without clear ideas about the consequences of their actions or the need for boundaries.<sup>5</sup>

The Austrians’ underlying argument was that the intellectuals, engineers, and academics who supported social engineering had a misplaced conception of (scientific) reason that conflated the complexity of a spontaneous order with the controlled predictable conditions of machines. Because they could bribe the electorate with social programs, democracy has an inbuilt tendency for the State to run away with itself, potentially destroying the foundations of liberalism (see Hayek, 1960). Hence, a strong state was needed to save democracy from itself. Charismatic entrepreneurs were important because they brought self-limiting change to the economy, which prevented it from going into decline, without the need for an active State (Mirowski, 2007: 19). Hayek (1945) backed this up with a sophisticated model of knowledge-use in the economy, paralleling Popper’s model of scientist-entrepreneurs accumulating

<sup>4</sup>Outside their Viennese penumbra were Strauss (1899–1973), Oakeshott (1901–1990), and Polanyi (1891–1976), and in the US, Friedman (1912–2006), Knight (1885–1972), and Kirzner (1930–).

<sup>5</sup>This is why Communism, Fascism, and the welfare state were seen as part of the same project, why Michael Oakeshott argued that the election of a postwar British Labour government in 1945 would lead to dictatorship, and why Hayek’s *Road to Serfdom* (1945) argued that social democratic policies lead to dictatorships.

knowledge and resources through piecemeal problem-solving. He argued entrepreneurs have access to forms of knowledge that are unavailable to government officials, and can use these to coordinate economic activity in ways that are always self-limiting because they are driven by a search for profitable opportunities. This makes them superior to government interventions.

While the economic turmoil of the 1970s was regarded by many as showing Hayek's predictions of Government overreach had been "vindicated by history"<sup>6</sup> there was little evidence that entrepreneurs played the positive role ascribed to them. Evidence was not needed for the argument to have force. As noted above, the argument was political and based on a counterfactual suggestion that outcomes would *always* be better with more entrepreneurs and less State intervention. This argument was convincing to politicians, small business owners, and large proportions of the voting public unconvinced by the economic *status quo*. Furthermore, deindustrialization, the performance of nationalized industries, increased outsourcing and re-organizations of production, the shift to commercialize research in small firms, the growth of venture capital, together with new innovative opportunities in bioscience and Information Technology (IT) *had* made the nexus of entrepreneurial SMEs more important to the economy. Hence, from the 1980s there has been considerable political and policy *demand* for research showing the value of entrepreneurs to the economy, to rationalize political decisions that had already been taken and guide future policy making. However, as the next section will show, there are major methodological difficulties in supplying the research to address that demand.

### 3. Methodological difficulties affecting empirical work

Studying entrepreneurial SMEs and their impact is subject to numerous methodological problems and formidable statistical challenges that can generate misleading results. Unfortunately, the level of statistical rigor in small business research is sometimes weak (MacPherson and Holt, 2007: 177), but clearly improving. As a result, while early research tended to support the view that entrepreneurship was a "good thing," later more sophisticated research reaches more nuanced conclusions. These problems that biased early research are given in the following sections.

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<sup>6</sup>Historians are more critical and suggest the Hayekian polices of limited fiscal or monetary intervention were the reason Austria was hit so hard by the Depression and had the gold reserves waiting to be taken in 1938. Democracy ended in 1934 not because the Social Democrats and Fatherland Front were united in corporatist social planning, but because they were fighting each other in a bloody civil war.



### 3.1 Data quality

Because small businesses often have smaller data reporting requirements, to simplify their bureaucratic burdens, coverage of small and young firms in administrative data sets is less comprehensive and detailed than data on large firms. The high levels of market exit for the youngest firms, where about half die in their first 3 years (Frankish *et al.*, 2013), often makes them invisible in conventional data sets. This creates an “uncertainty principle” with SME data that trades off quality against coverage. As a result, three major problems arise. First, the data might simply not exist. Second, the data might be inaccurate because data reported by small firms receive less scrutiny. This leaves more scope for measurement error, as well as deliberate misreporting (often associated with opaque book-keeping for tax evasion). Third, the available data are rarely representative. Firms that die shortly after entry are less likely to provide information on their activities than firms that succeed and grow. This creates survivor bias as it underrepresents unsuccessful small firms, leading to a misleadingly positive picture. This bias is increased because standard statistical data-analysis programs react to missing observations for specific variables by automatically removing the entire firm, further under-sampling poor-performance small entrepreneurial firms.

### 3.2 Unrepresentative samples

The uncertainty principle means that to get good data, researchers often have to use unrepresentative samples. For example, Eesley and Roberts (2010) investigate entrepreneurial learning in a sample of Massachusetts Institute of Technology (MIT) alumni, 44% of whom had postgraduate degrees; Sanandaji (2010) constructs an entrepreneurship index based on a list of billionaires; Shane’s (2000) seminal study on entrepreneurial opportunities focuses on entrepreneurs taking advantage of MIT patented technology; and Audretsch (2007) explores innovation from appropriation of knowledge spillovers and university patents. Like lottery winners, these atypical subsamples are a tiny minority of the most successful cases, and, although highly visible, give a misleading picture of entrepreneurship in general.

### 3.3 Extremely skewed statistics

One of the few general features of entrepreneurial firms is the skewness of their statistics—whether it be skewness of start-up size, longevity, or financial performance. In research into Venture Capital, for example, the inclusion or exclusion of one observation, Google, can change the results (Hall and Woodward, 2010). Most entrepreneurial firms perform poorly, while a tiny minority of firms brings up the average performance of a cohort of firms. As a consequence, results are often sensitive to sampling, and it is not meaningful to focus on averages, or use conventional regression strategies (such as Ordinary Least Squares regression (OLS)) that focus on “the average effect for the average firm.”

For example, Shane (2008: 168) notes that “since 1970, venture capitalists have funded an average of 820 new companies per year . . . a tiny proportion of the more than two million attempted business entries every year . . . . By 2003, companies that had been backed by VC employed 10 million people, or 9.4 percent of the private sector labour force, and generated \$1.8 trillion in sales . . . . In 2000, the 2,180 publicly traded companies that had received venture capital backing between 1972 and 2000 comprised 20 per cent of all public companies, 11 per cent of sales, 13 per cent of profits, 6 per cent of employees, and one third of total market value, a figure in excess of \$2.7 trillion dollars . . . . In short, a very significant proportion all of the value generated by start-ups in the USA has comes from this handful of VC backed firms.” If so much impact comes from such a small subsample of firms that can be characterized as “VC backed,” it is not clear how useful it is to talk about the average firm, or use categories such as SMEs or entrepreneurship, as it is potentially misleading to connect the properties of atypical subsamples to the entire population of firms.

### 3.4 Definitional Flexibility

SMEs and entrepreneurial firms are not natural kinds and there is considerable ambiguity about the relevant definitions (Baumol, 2010). Because of the data problems highlighted earlier, definitions are often driven by what data are available. As a result, they are rarely consistent, which makes comparing research findings difficult. Van Praag and Versloot’s (2007) influential and comprehensive survey, for example, defines entrepreneurial firms as “firms that satisfy *one* of the following conditions: (i) They employ fewer than 100 employees; (ii) They are younger than 7 years old; (iii) They are new entrants into the market.” Dennis (2011) defines entrepreneurship in terms of competition (p. 98) and then in terms of being innovative (p. 99) even though most new small businesses have no innovative contribution. Henrekson (2005: 439) and Reynolds *et al.* (2005: 223) define entrepreneurship in terms of subjective growth ambitions. Shane and Venkataraman (2000: 218) define entrepreneurship in terms of opportunities to create future goods and services. Baumol (1996: 6; [1990]) defines entrepreneurs in terms of personality traits and future success as “persons who are ingenious and creative in finding ways that add to their own wealth, power, and prestige . . . .” Bottazzi and Da Rin (2002: 235) and Avnimelech and Teubal (2006: 1477) confine “start-ups” to high-tech industries. Following Van Praag and Versloot (2007), we define entrepreneurs as people who start firms, and entrepreneurial firms as firms <7 years old. These definitions may be entirely appropriate for the specific studies in question, but the lack of common definitions complicates the cumulative generation of knowledge.

Given these difficulties, it is no surprise that among most policymakers there is also a “raging confusion . . . between new, small, and entrepreneurial firms” (Dennis, 2011: 92). Small business is often taken as a synonym for entrepreneurship. However, while most new firms are small, most small firms are old (see Coad and

Tamvada, 2012). Even the definition of small is unclear. In the United States, small businesses are defined as businesses with <500 employees, but in Europe, SMEs are more often considered as firms with <250, and sometimes 20, employees.<sup>7</sup> So, the path-breaking book by Acs and Audretsch (1990) on the innovative prowess of small firms is talking about manufacturing firms with up to 499 employees, many of which would be considered large firms in Europe.

There is also confusion between new firms that are start-ups and new plants that are started up by older established firms. While this can sometimes be picked out in the data, it is much more difficult to address reincorporations by existing firms.<sup>8</sup> Haltiwanger *et al.*'s (2010) data, for example, show US start-ups (i.e., new firms) in 2004 with >10,000 employees at founding.

Defining when firms are born is similarly difficult and often driven by data availability. In the Panel Study of Entrepreneurial Dynamics, firm births are defined when firms become profitable. Thus Reynolds and Curtin (2008: 70) define when firms start as when: "monthly cash flow covering all expenses and owner's salaries had occurred in six or more of the past twelve months." This would clearly miss start-ups that make no profits for a number of years (e.g., biotech firms), or exit without ever making a profit. Armour and Cumming (2006: 597) by contrast define Venture Capital portfolio firms as those that have *not* yet made a profit. Meanwhile, the Global Entrepreneurship Monitor (GEM) global report 2009 (p. 13) defines birth when wages have been paid for >3 months. Storey (1994, Chapter 2) defines firm births in terms of firm registration, and then Value Added Tax (VAT) registration (i.e., when sales exceed £68,000). Finally, a practical definition of entrepreneurship becomes problematic if "entrepreneurship can also occur within an existing organization" (Shane and Venkataraman, 2000: 219), as any success story in any firm can be credited to entrepreneurship.

### 3.5 Regression to the mean

The statistical fallacy of regression bias, associated with "regression to the mean," has been found in a number of economic applications (Friedman, 1992), including the job creation of small businesses. The problem arises when growing entities are sorted according to their initial size. If a small firm grows large, it will usually be classified as a fast-growing small firm. However, if it subsequently reverts to its original size, it will be classified as a fast-shrinking large firm (because its size at the beginning of the period was large). As such, growth will tend to be attributed to small firms, while

<sup>7</sup>According to the EU definition of SMEs, however, the threshold is 250 employees (see e.g., [http://ec.europa.eu/research/sme-techweb/pdf/sme-definition\\_en.pdf](http://ec.europa.eu/research/sme-techweb/pdf/sme-definition_en.pdf)).

<sup>8</sup>The upward bias caused by treating re-incorporations as new firms was brought home to us when we found the new UK firm that produced the highest number of jobs in its first year in our sample was Manchester United Football Club. A similar problem exists with firms created as legal "off-balance sheet" instruments to transfer Intellectual Property payments by large firms to reduce taxes.

decline will be attributed to large firms. Furthermore, if firm size is measured with error, then this measurement error will amplify the job creation of small firms to the detriment of large firms. Davis *et al.* (1996) highlighted that the highly influential study by Birch was susceptible to this statistical fallacy, and that firm size should not be measured by taking average size rather than initial size. Davidsson *et al.* (1998) found that this bias has a significant impact, but nonetheless they still found that small firms still make a disproportionately large contribution to job creation.

### 3.6 Conceptual Slides

The section on definitional flexibility has shown that using the same term “entrepreneurship” to describe two different activities—starting a firm and coordinating the economy—can lead to conceptual confusion. Other problems in the literature include the slide between net and gross figures (i.e., in job creation), and the distinctions between levels and changes. As the next section will show, this is a major problem in relation to employment analysis because small and new firms both create and also destroy many jobs. The importance of taking into account levels is clear when understanding changes. For example, SMEs and new entrants often have high growth rates across a range of metrics (such as the usual “log-difference” growth rates), but this is only because their starting points are so low. Olympic athletes (level) find it hard to improve their performance (change), but extremely unfit people (level) can benefit substantially (change) from even moderate exercise. We do not therefore suggest that athletic teams be made up of unfit people, but it is common to see the high growth rates of entrepreneurial firms’ employment, productivity, etc., used to suggest that more start-ups are needed.

A further conceptual problem is the “genetic fallacy,” which dogs the entrepreneurship-SME policy literature. This occurs when the properties of large, established, successful firms are attributed to small new firms because they were once young. For example, Microsoft, Apple, and Google are regularly used as examples of entrepreneurial firms. It is misleading to focus on one short part of a successful firm’s lifecycles, while ignoring the rest of their history and the population of unsuccessful firms. In music policy, we do not extol the virtues of infants just because Beethoven was once an infant, but a similar argument is common in SME policy.

## 4. The contribution of entrepreneurs and small firms to the economy

In this section, we explore the literature on entrepreneurship to show how the recognition of the problems outlined in the last section has produced a more nuanced interpretation of the value of SMEs and entrepreneurs. The literature we explore draws on the excellent survey of van Praag and Versloot (2007) and the bibliometric study of Landström *et al.* (2012), which captures the core 100 studies in

entrepreneurship. We highlight two common patterns. First, bias driven by political demands for positive evidence, which creates a shift toward increasingly positive interpretations as one moves from analysis, through the gray literature, to policy. Second, a temporal shift, as more modern studies, with better data and methods, generate more nuanced and ambiguous findings.

#### 4.1 *Employment creation*

As Dennis, (2011: 92) highlights, “the basic issue for policymakers is jobs. Policymakers need jobs; smaller firms produce jobs; so small business remains a central focus for many policymakers.” Consequently, David Birch is an important historical figure in entrepreneurship research because he addressed this demand by producing a series of studies on the importance of SMEs and entrepreneurs. These showed small firms created ~88% of all net jobs between 1981 and 1985. Almost as soon as they were published, the results were criticized.<sup>9</sup> While most new jobs are created in small establishments, most of this may occur in small plants owned by large established firms, not by new entrants. The focus on net rather than gross job creation overlooked how most of the jobs created by small firms quickly disappeared (Brown, Hamilton and Medoff, 1990). Across industries and countries, levels of exit are high for entrepreneurial firms with some 20%–40% of firms dying in their first 2 years and only 40%–50% surviving beyond their seventh year (Bartelsman *et al.*, 2005; Audretsch, 1995). Storey (1994: 165) found firms with <20 workers were responsible for 54% of gross job gains, which sounds remarkable until he points out that they were also responsible for 54% of gross job losses.

There is a large and robust body of evidence, emerging from firm-level regressions of employment growth on size, which finds small firms grow faster (i.e., it finds a negative association between size [and age] and subsequent growth, when controlling for age [and size]) (for a survey see Coad 2009, Chapter 4). This finding is robust even after controlling for regression to the mean and survivor bias. It has been robustly shown that small firms do not necessarily follow Gibrat’s law (Calvo, 2006; Hart and Oulton, 1996), but as the discussion of levels and rates highlighted, this is not necessarily a good thing, and could be a sign of weakness if firms started below the minimum efficient size in their industry are dashing for growth (Lotti and Santarelli, 2004; Santarelli and Vivarelli, 2007: 467).

This dynamic weakness is why many sectors are characterized by a fringe of sub-optimal “revolving door” firms that are continuously entering and exiting the market (Santarelli and Vivarelli, 2007: 457). As Santarelli and Vivarelli note, “if entry were driven mainly by technological opportunity, growing sales and profit

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<sup>9</sup>The US Small Business Association still trumpets Birch’s findings even though more recent work has cast them in considerable doubt (Neumark *et al.*, 2011: 16).

expectation, one should observe a negative cross sectional correlation between entry and exit rates, in particular over short time intervals. On the contrary, exit and entry rates are positively and significantly correlated and market ‘churning’ emerges as a common feature of industrial dynamics across different sectors and different countries.” (2007: 457; see also Geroski, 1995). This churn is another reason why policy reports that suggest SMEs create jobs are technically true, but misleading. After all, in 2005, entrepreneurs created 3.5 m of the 2.5 m jobs created in the US economy (i.e., 14 out of every 10) (Haltiwanger *et al.*, 2010).

Recently, Haltiwanger *et al.* (2010) consider job creation by both size and age of firms using high-quality data and methods that control for regression bias. They find that small firms do not create more jobs than large firms, but young firms do. Furthermore, while they observe that conventional analysis shows that small firms grow faster, nonetheless the smallest do not grow at all. In most subsequent years, cohorts of firms lose more jobs than they create because market exit exceeds job creation in the surviving firms. However, they note that the job-creating potential of nascent firms is nonnegative by construction in their first year, unlike other age categories. New firms cannot lose more jobs than they create in their first year because they had no jobs to lose from the previous year. Because other cohorts can have negative contributions to job creation through market exit, it is not easy to jump from “new firms create jobs in their first year” to the conclusion that more start-ups will lead to more jobs.

Things become more complicated once we investigate the characteristics of the jobs created. Baldwin (1998) observes that “while small producers have increased their employment share dramatically, they have barely changed their output share” (p. 349), and that controlling for job quality (proxied by remuneration) small producers do not create more employment than their larger counterparts. The advantages of higher numbers of small firm jobs are offset by their lower productivity. SMEs employ individuals with lower levels of human capital in terms of experience and education (Winter-Ebmer and Zweimuller, 1999; Troske, 1999), have lower capital-skill complementarity (Troske, 1999), and offer lower returns to experience and education (Oosterbeek and Van Praag, 1995). Given that small firms tend to be less productive, have lower remuneration (i.e., more volatile), fewer benefits (such as pension schemes), fewer training opportunities, and more work-related accidents (Storey, 1994), increasing SME employment, while large firm employment declines and output remains unchanged, may just be a societal wealth transfer.

Some other issues should also be raised here. First, although small firms create most jobs (job growth), large firms contain more jobs each (job levels). As we highlighted earlier, Bartelsman *et al.* (2005, their Table 2) show that the employment share of firms with <20 employees is only 16.6% in the United States. Second, SMEs and large firms do not exist in isolation, but form part of an interacting system, with large firms providing SMEs with markets and outsourcing contracts (Harrison, 1994). Thirdly, the employment generation potential of firms is extremely skewed,

with most new market entrants only having a tiny impact on long-term job creation. When Birch's (1985–1987) data were reexamined, it was found that 75% of the employment gains came from 0.3% of the 1985 cohort that already employed >100 workers when they were first launched (Harrison, 1994).

As a result, it remains an open question whether fewer or more new firms would lead to more jobs. Shane (2009: 144) observes that “43 people have to try to start companies so that we can have 9 jobs a decade from now. That’s not the spectacular yield you might think we’d get if you read the press reports about the job creation of start-ups.” The high levels of market exit have a high personal and social cost and may cause firms to stay in the market too long, bringing down profits and increasing factor prices for other firms (Santarelli and Vivarelli, 2002).

#### 4.2 *Productivity and productivity growth*

It used to be thought that competition caused lower productivity firms to be displaced by higher productivity firms. We now know that productivity levels are heterogeneous and strongly persistent. As a result, there is a long tail of poor-performance firms in all economies that have been studied. As Hughes (2008: 134) notes, “In 2007 there were 4.7 million enterprises in the UK economy. Of these, however, 3.5 million employed no one. These sole proprietors or individuals otherwise working for themselves accounted for around 17% of UK employment, but only 8 percent of turnover.” Small firms’ labor productivity and total factor productivity are also lower than for larger firms (Brouwer *et al.*, 2005; Castany *et al.*, 2005). Hence, when they experience faster productivity growth, it is normally due to “catch-up effects” from their lower initial productivity level.

Recent work has highlighted the extensive time it takes for new entrants to compete on par with incumbents. Cowling *et al.* (2011) use a representative sample of the UK economy and find that young firms are at a considerable disadvantage compared with older firms. It takes ~5 years for firms to learn about technology, but many decades to reach higher productivity levels in relation to both the quantity and quality of their staff. Hence, the impressive productivity of new entrants is usually due to the entry from established chains, rather than entry by “new” firms (Disney *et al.* (2003) for the UK, and Foster *et al.* (2008) for the United States).

The Disney *et al.* (2003) study is important because of its influence on European policy. It is commonly understood to imply that almost all productivity growth in UK manufacturing (between 1980 and 1992) was driven by new entrants, while “internal” productivity growth caused by organizational learning and new technology among incumbents was marginal. What the authors actually say is that what they call external restructuring (exit, entry, and market share change) accounts for 50% of labor productivity growth and 80%–90% of total factor productivity growth (Disney *et al.*, 2003: 666). They disaggregate the effects between entrepreneurial firms and established firms and show that the greatest contribution to labor productivity was

learning and organizational change within established firms at 44.6% (the contribution of entrepreneurial start-ups to this change was 0.58%) (Disney *et al.*, 2003: 682). The second biggest contribution was through established firms opening and shutting down plants at 33.2%. The contribution of net entry by entrepreneurial start-ups was much lower at only 15.9% (roughly half the effect of established firms). When we look at the data on total factor productivity, established firms have 19× more contribution to within effects (4.37% vs. 0.23%), 126× more contribution to between effects (13.9% vs. 0.11%), 53× more contribution to cross effects (23.2% vs. 0.43%), and 3× as much contribution to net entry effects (41% vs. 12.7%). This poor performance for entrepreneurial entrants may be an overestimate because the data suffers from survivor bias when short periods are considered, that is, 4 years and under (Disney *et al.*, 2003: 683) as ~60% of new entrants will exit within 4 years.

### 4.3 Innovation

von Thünen once suggested that “Necessity is the mother of invention . . . so the entrepreneur through his troubles will become an inventor and explorer in his field” (cited in Hebert and Link, 2006: 311). Today, few entrepreneurship scholars believe necessity entrepreneurship is the mother of invention. So few start-ups are innovative that any innovative start-ups are atypical. Most small new firms lack the capital and resources available to large firms; cannot diversify the risks as well as large firms; find it harder to access external funding; cannot capture the benefits of the high-variance, highly skewed returns from investing in innovation; lack market power; and lack the diversified output of larger firms, which makes it more difficult for them to apply the outcomes of research as effectively (Ortega-Argiles *et al.*, 2009; Cohen and Klepper, 1996). Hence for a long time, a consensus existed that larger firms were better innovators, supported by strong evidence that R&D rose more than proportionally with size (Comanor, 1967) (though possibly with a threshold effect [Scherer, 1965, 1991]).

More recent research has highlighted important technological and sectoral effects and that when these are included (Scherer and Ross, 1990), R&D spending is proportionate to size in most sectors. The sectors where larger firms invest more in R&D outnumber the sectors where they invest less (Ortega-Argiles *et al.*, 2009). Large firms drive R&D and innovation in highly concentrated sectors that have low rates of entry, higher appropriability, and more limited technological opportunities, while SMEs drive innovation in sectors with the opposite conditions (Ortega-Argiles *et al.*, 2009: 5).<sup>10</sup>

<sup>10</sup>However, the evidence on “wacky patents” such as novelty soap holders and imaginative religious devices (see US patents US5078642 and US4866863) suggests that these kinds of patents are predominantly held by individual applicants rather than corporations (Czarnitzki *et al.*, 2011).



Given that R&D is more formalized in large firms, there is a bias against small firms in the data due to the informal nature of their research (Kleinknecht and Verspagen, 1989). Moreover, R&D is only an input, not an output, and it might mean that small firms spend proportionately less because they are more effective, which seems to be the case in some sectors (e.g., biotech) (Rothwell and Zegveld, 1982). This “nimbleness” may drive structural changes in the economy even if the nimble innovators do not grow to be large firms, or the benefits of their innovations are captured by large firms. In sectors such as pharmaceuticals, small biotechs have helped fundamentally transform the sector even if they have not displaced large firms. These complex systemic interactions remain poorly understood, but if large established firms and small new firms innovate in symbiotic ways, it may be meaningless to contrast the two.

Renewed interest in the innovative activity of SMEs was aroused by the seminal study of Acs and Audretsch (1990) who found that small firms generated more innovations per employee than large firms. However, as noted earlier, their study was of firms with <500 employees, which includes many large firms by European standards. Moreover, these firms are not necessarily new. Similarly, Love and Ashcroft (1999) observed that the number of (self-reported) innovations per employee decreases with size in their sample of 304 Scottish plants. However, the metric of innovations “per employee” (and, similarly, the metric of R&D personnel/employees) will make smaller firms look better than metrics such as total number of innovations, or quality or value of innovations because of aggregation problems (Kleinknecht and Verspagen, 1989). The results might also reflect an ineffective “jack-of-all-trades” division of labor (as suggested by the productivity data). For example, if an integrated firm were separated into a group of SMEs undertaking specialized functional tasks, the SMEs undertaking innovation-related tasks would score more highly on a measure of innovations per employee than the large integrated firm, and the effect would be amplified if the noninnovating SMEs were excluded from the sample.

Other examinations of new firms are less optimistic. Almeida and Kogut (1997) and Sorensen and Stuart (2000) find entrepreneurial firms generate fewer patents. Astebro (2003) investigated the fates of 1091 Canadian innovators who started firms and found that 93% failed to reach the market; of the ones that did reach the market, 60% lost money, and their median financial return (i.e., of the successes) was  $-7\%$ , with any positive benefits taken by a tiny handful of the firms. Van Praag and Versloot (2007: 377) summarize the evidence as follows: “Entrepreneurs do not spend more on R&D than their counterparts. They produce fewer patents, new products and technologies. Moreover, the percentage of radical innovations is lower among entrepreneurial firms.”

Finally, there is considerable interest in SME’s role in driving innovative regional clusters, often drawing on anecdotal evidence about Silicon Valley start-ups. The start-up culture in Silicon Valley is certainly phenomenal, but it has not, to our

knowledge, been replicated elsewhere through small firm policy. This may be because the electronics industry in Silicon Valley was initially formed by spinouts from a large firm (Fairchild). Gordon Moore, the founder of Intel, observed that “successful start-ups almost always begin with an idea that has ripened in the research organization of a large company (or university). Regions without larger companies at the technology frontier or research organizations of large companies will probably have fewer companies starting or spinning off.”<sup>11</sup> This view is supported by Hvide (2009) who shows that low-quality entrepreneurs emerge from small firms, while high-quality entrepreneurs emerge from large firms (see also Klepper, 2001). These large-firm spinouts are often categorized as small firms even though their ideas were incubated in large firms, highlighting how misleading it can be to treat small and large firms in isolation. Other successful firms, such as Google, drew on public sector research (Block 2008: 195; Mazzucato, 2011), suggesting successful entrepreneurial firms are often the consequence of public policy, not an alternative to it.

#### 4.4 *Utility*

A large literature now shows that self-employed individuals are happier than their employed counterparts, even taking into account their lower expected earnings. This has been explained in terms of the self-determination and autonomy that accompanies the phenomenon of “being your own boss” (Benz and Frey, 2008). Binder and Coad (2013) focus on the years immediately surrounding the transition into self-employment, and detect a significant increase in life satisfaction for those moving from employment (compared with those staying in regular employment), but no such benefits for those transitioning out of unemployment. Research also shows that individuals working in small firms tend to be more satisfied with their jobs than individuals working in larger firms (Idson, 1990). This is explained in terms of greater rigidity in the structure of work in large firms.

#### 4.5 *Macroeconomic growth*

Audretsch (2007) surveys a range of books and working papers that report a positive association between the SME sector and economic growth. However, because of the problems highlighted in Section 3, they can typically only show a statistical association rather than a causal effect. This is a problem because entrepreneurial activity and high growth rates are both associated with low levels of economic performance within and across nations. The only study we have found that controls for endogeneity is by Beck *et al.* (2005) who analyze panel data on 45 countries and observe that, while the SME sector displays a positive association with economic growth, this relationship is not robust to the use of instrumental variables to control for endogeneity. This leads them to conclude that (p. 224) “although a prosperous SME

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<sup>11</sup>See Auerswald and Branscomb (2003: 236).

sector is a characteristic of flourishing economies, we cannot reject the view that SMEs do not cause growth.” The explanation that entrepreneurs are more inclined to start firms when they perceive the economy will grow, but do not themselves contribute toward that growth, is problematic because start-up rates are generally unrelated to the business cycle, even though death rates are procyclical (Davis *et al.*, 1996).

As the result of studies such as this, economists are now much more cautious about the relationships involved. Blanchflower (2004: 30), for example, writes in a recent review that “I have seen no convincing evidence of any kind in the literature that either increasing the proportion of the workforce that is self-employed, or having a high level of self-employment produces any positive macroeconomic effects.”

## 5. From entrepreneurial firms to muppets and gazelles

There are good historical reasons why “the entrepreneurial virtues of new businesses are often assumed rather than examined” (Holtz-Eakin, 2000: 284), but as the empirical evidence in the previous section has shown, recent research is more sober about the value of self-employment and entrepreneurship. It certainly is the case that a small number of start-ups has a positive impact on the economy, but most of the time, for most of the firms, and for most of the performance metrics, the economic impact of entrepreneurial firms is poor. Given this skewed distribution of impacts, the analytic value of a single category of “entrepreneurial firms” is questionable. Analytic precision would be improved by dividing the category into at least two subcategories that could be positioned along a performance continuum from high impact firms or gazelles at one end, to poor performing firms at the other. We refer to these poorer performing firms as “marginal undersized poor performance enterprises,” or muppets, with the category intended to capture the *median* small business. The firms are marginal because they lack the ambition or capability to grow or innovate, have high death rates, and are poorly captured in statistics or academic studies. They are undersized because they lack the minimum efficient scale needed to perform on par with incumbents in their sectors and industries. As a result, they are poor performance: they have low productivity and low levels of innovation, and generate churn rather than economic growth.

Starting such a firm is like entering a lottery (Storey, 2011; Vivarelli, 2011: 201), with high death rates, skewed returns with most players losing out, random growth, little or no entrepreneurial learning (“learning to roll a dice” [Frankish *et al.*, 2013]), no influence of education on performance, little control over outcomes but substantial overconfidence among players. Like the median lottery player who does not make money after arguably irrationally entering a game where the average payoff is less than the ticket price, most entrepreneurs do not gain a wage premium compared

with waged workers. Like lottery players they are psychologically happier, which may be related to them being more optimistic and overconfident (Camerer and Lovo, 1999; Parker, 2004). As with lottery players, it is not clear that unsuccessful entrepreneurs should be encouraged or subsidized to try again, given that the evidence on entrepreneurial learning from large-scale studies of unsuccessful entrepreneurs is generally weak (Metzger, 2006; Frankish *et al.*, 2013). And lastly, as with lottery players, a tiny minority of “winners” is very visible in the popular press, while the large number of losers is overlooked.

Recognizing that the median entrepreneurial start-up is likely to be closer to a muppet than a gazelle also helps explain a number of stylized facts in industrial dynamics: market entry is common (particularly for smaller firms) despite low survival rates and the high positive correlation between entry and exit (suggesting it drives churn rather than growth); growth is difficult and it can take a long time for entrants to compete on par with incumbents (~10 years); growth is rarely persistent (Hölzl, 2013) and is approximately as persistent as a random coin toss (Coad *et al.*, 2013); adjustment costs are high (and penalize large scale entry and rapid postentry growth); and as firms get both older and larger their survival improves (Geroski, 1995; Stam, 2010).

The re-categorization also helps capture the extent to which the average entrepreneur shares characteristics with someone like Bill Gates and is able to grow a major firm. The typical entrepreneur is more like someone who starts from an underprivileged position (people with good jobs are less likely to start firms), uses his/her savings to start a low-productivity firm (e.g., a fish-and-chip shop), in an established highly competitive market (e.g., a town with two fish-and-chip shops, but a market that can only support one). As a result, if they are still around in 2 years, which is unlikely, it is only because they have displaced a similar marginal firm. Such firms create a lot of jobs, but also destroy a lot of jobs, and while their owners are happier, they have a fairly marginal impact on the economy.

While this re-categorization fits the empirical evidence, it is at odds with the dominant Austrian theoretical position in the entrepreneurship literature, which often ascribes the properties of gazelles to the average market entrants. For example, Kirzner’s stylized vision of entrepreneurial opportunity recognition holds that entrepreneurial discovery “involves the surprise that accompanies the realization that one had overlooked something in fact readily available” (Kirzner, 1997: 72). This is difficult to reconcile with the fact that most entrepreneurial entry decisions turn out to be mistakes, and are followed by rapid exit. Shane (2000) recognizes that not all opportunities recognized by entrepreneurs are correct, but nonetheless maintains that entrepreneurship still moves an economy from disequilibrium to equilibrium: “By buying or selling goods and services in response to the discovery of price misalignments, an individual can earn entrepreneurial profits or incur entrepreneurial losses. Collectively, this process of decision making about prices moves an economy from disequilibrium to equilibrium.” In a similarly highly influential article, Shane

and Venkataraman (2000: 219) write that “entrepreneurship is a mechanism through which temporal and spatial inefficiencies in an economy are discovered and mitigated.”

The Austrian approach focuses on entrepreneurship as the process by which prices in the economy are coordinated, with the actual act of founding a firm taking a secondary role. By reducing economic coordination to market activity, the Austrian approach downplays the role of managers within established firms (and automated trading systems within financial markets, which perform the majority of market coordination in the global economy). Moreover, by defining entrepreneurship in terms of successful market coordination, they focus exclusively on the benefits of entrepreneurship and miss its costs. However, the evidence on start-ups clearly suggests the majority of entrepreneurs act on incorrectly perceived opportunities, and as a result most entrepreneurs perform poorly. Even successful entrepreneurs receive remuneration below the levels they would receive working in an established firm. As a result, entrepreneurship may multiply inefficiencies, rather than mitigate them, and move the economy further into disequilibrium. This is a particular problem if low-quality entrepreneurial start-ups free-ride on the credentials of less risky entrants, bring down the average quality of investor returns, increase factor prices, and cast doubts over the viability of financial markets (de Meza, 2002).

### ***Policy implications***

The text-book model of the entrepreneur, produced by Mansfield (1962), provides the standard theoretical framework for understanding and formulating entrepreneurship policy. It suggests that an unexploited pool of well-informed potential entrepreneurs are lying outside the market and are triggered into becoming entrepreneurs when expected levels of profit make it a rational way to allocate their time and resources. Because these levels of profit are constrained by market failures, policy should aim to remove market failures that create barriers to entry. Doing so will allow a stream of entrepreneurs to enter the market and generate economic growth and prosperity. When combined with the new model of political economy outlined in Section 2, which asserts entrepreneurs *do* generate growth, and the empirical evidence in Section 4, which asserts entrepreneurs *do not* generate the value the model ascribes to them, the obvious conclusion is that there are major barriers to entry constraining (counterfactual) entrepreneurship. If these are addressed by policy, significant economic benefits could be realized. Hence there is a major emphasis on removing financial constraints and encouraging investment in start-ups, creating a more entrepreneurial culture, and increasing market entry (EVCA, 2010: 6).

If we break entrepreneurial firms into muppets and gazelles, rather than using a single category, an alternative position emerges. This suggests the key issue is growth, which is hard (not easy), rather than market entry, which is easy (not hard). Moreover, poor performance is likely to reflect weaknesses within firms rather

**Table 1** Transitions through the suggested hierarchy (“pecking order”) of employment states from the policymaker’s perspective

|       |               | End                     |                             |               |                            |
|-------|---------------|-------------------------|-----------------------------|---------------|----------------------------|
|       |               | Unemployed              | Self-employed               | Employee      | Employer                   |
| Start | Unemployed    |                         | Necessity entrepreneurship  | Finding a job | Best case, but unrealistic |
|       | Self-employed | Lost a job              |                             | Improvement   | Hire first employee        |
|       | Employee      | Lost a job              | Lifestyler, semi-retirement |               | High-quality spinout, MBO  |
|       | Employer      | Worst case; lost a firm | All employees gone          | Career change |                            |

than external market failures or information asymmetries. The reason investors chose not to invest in start-ups may not be due to market failures, but because the market is working well and the firms are not worth investing in. In a well-functioning capitalist economy, many firms do not deserve to be funded, will not be funded, and will exit the market as a consequence (Coad, 2010).

This implies that across the board subsidies or encouragement of more market entry may be dysfunctional (Santarelli and Vivarelli, 2007). Entry is high already and arguably excessive (Shane, 2009). If quality is negatively related to quantity, more may mean worse (Greene *et al.*, 2004) and increasing the number of start-ups might merely increase the number of poor performance enterprises (Branstetter *et al.*, 2013), leading to churn and distortions that constrain the growth of other firms (Santarelli and Vivarelli, 2007).

In developing policy it would therefore be helpful to move away from glorifying entrepreneurship. One option would be to follow a simple hierarchy (or “pecking order”) of employment states, that goes from (i) employers, to (ii) employees, to (iii) self-employed, to (iv) unemployed, based on empirical evidence about relative wages (Tamvada, 2010; Binder and Coad, 2013) and productivity.<sup>12</sup> Rather than focusing on getting individuals into self-employment, policymakers would be better off trying to improve the overall system—helping transitions from self-employment

<sup>12</sup>In terms of utility, however, the ordering is different, with employers first, then self-employed, then employees, and then the unemployed (cf. Blanchflower, 2004), to reflect the value individuals place on being their own bosses (Salas *et al.*, 2012).

into employment (Shane, 2009), or from employment to employer status, or (even better) from self-employed into employer status (see Table 1).

Within this hierarchy, moving from being an employee to self-employment, which is traditionally seen as an improvement, is instead a deterioration. The move may simply correspond to employees with resources semi-retiring, which may make them happier, but is likely to reduce income and productivity. Similarly, it helps show why high numbers of self-employed individuals are not associated with economic development (Lerner, 2010; Shane, 2009; see also Sanandaji, 2010), as they are lower down in the hierarchy, just above “unemployed.” Analyzing the costs and benefits of movements between the categories would need to capture the differences in the quality of jobs in large and small firms (Storey, 1994; Baldwin, 1998) and how “small businesses provide a safety net against unemployment by big businesses” (Robbins *et al.*, 2000: 295). These movements are important because “when recessions occur and large businesses lay off employees, a significant number of the displaced employees either start small businesses or are absorbed into employment by the small business sector” (*ibid.*). Lucas (1978) presents a useful starting point for analyzing these interactions.

The reframing might also suggest that policy should focus on gazelles by encouraging growth of high-impact firms rather than market entry (Smallbone *et al.*, 2002; Santarelli and Vivarelli, 2007). However, SME policy has some interesting twists.<sup>13</sup> Poor performance enterprises, unlike gazelles, are easy to find because they represent such a large proportion of the population of firms. Moreover, their performance is often so poor that even simple low-cost interventions can be effective. By contrast, high-performance firms are much harder to find because they are so rare. Even if they can be found, it is not clear that government policy can help them because their problems are so diverse, and interventions might shift behavior in unhelpful ways. Unfortunately, our understanding of public policy to support SMEs remains limited, as it is rarely evaluated. In public policy evaluation circles, this is often taken as a sign that the policies reflect wasteful subsidies to lobbying groups (Storey, 2006). What studies have been done suggest a wide variety of impacts, but more research is needed to understand why.

Policy that recognized the importance of the distinctions identified above would be a big improvement on what we have now. There is, however, an even broader agenda that awaits the attention of academic researchers and policymakers alike. In the end, economic performance is a product of a complex ecology, in which small firms, large firms, government initiatives, and other factors all play distinctive and significant roles. In such a complex setting, the identification of policy initiatives that are actually helpful is a major challenge, and even the definition of “helpful” presents problems. The main thing we can be confident about is that simple recipes for

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<sup>13</sup>We are grateful to Marc Cowling for this point.

improvement deserve intense scrutiny, in proportion as they are also expensive, lest their implementation lead us even farther from the productive ecology that we seek to foster.

## 6. Conclusion

The aim of this article has been to highlight how current academic thinking is increasingly at odds with the predominant perspective of entrepreneurship in public policy, which almost exclusively assumes it is a positive thing. The value of entrepreneurs has become such a part of the cultural zeitgeist that to ask for evidence, or even question the robustness of that evidence, has become the height of political incorrectness.

However, weighing up the evidence, it seems that both the impact of entrepreneurship on the economy and the relative performance of entrepreneurial firms compared with established incumbents are often weak. It seems to be negative for wage levels; remuneration levels; remuneration volatility; benefits; number/frequency of patents; new products and technologies; percent of radical innovations; importance of innovations; adoption of innovation; labor productivity; and total factor productivity (see also van Praag and Versloot, 2007). It is robustly positive for happiness and job satisfaction and for job creation in the first year. However, this latter finding is positive by construction, and care must be taken when interpreting it, as it is consistent with market entry being excessive, new firm formation generating employment churn, and decreasing market entry leading to increases in total employment. Start-ups have higher growth of value added, growth of labor productivity, and growth of total factor productivity, but this is for the simple reason that they start off with much lower performance (i.e., higher rates of change reflecting lower not higher starting levels). The evidence certainly supports the view that *some* new market entrants have a positive influence on the economy, but it is at odds with the widely held policy view of the uniquely positive impact of entrepreneurs.

Demand for this view emerged in the 1970s, and its roots go back to a small group of European intellectuals working outside the mainstream in the 1950s who in turn had their intellectual roots in the political thought of 1930s central Europe. Entrepreneurs as a political category emerged from postwar attempts to find ways of avoiding active government, and these roots continue to influence the subject even now. For example, Kirzner, reviewing the literature in 1997 nearly a decade after the Berlin Wall fell, still contrasted entrepreneurship against socialist central planning (Kirzner, 1997: 77ff). Given that it is unlikely that many readers of the *Journal of Economic Literature* regarded central planning as a viable economic model in 1997, it illustrates how much Vienna's tumultuous history still influences academic thinking.

This history has biased the literature by creating a strong demand for research that shows entrepreneurship to be a "good thing." For us, whether entrepreneurship is a



good or bad thing is an empirical question subject to numerous methodological problems, and not something that should be unquestioningly assumed by armchair theorists. Initial studies tended to be positive, but this positive assessment has now undergone significant revisions as the biases have been taken into consideration. All the same, our review of the evidence strongly suggests that a small proportion of atypical start-ups have a positive impact on the economy, new firms do create new jobs in their first year and entrepreneurs are much happier, despite their economic condition. In some atypical places like Silicon Valley, high-tech entrepreneurship can be a major driver of innovation and economic growth, but care must be taken in extrapolating from these exceptional conditions. But in many other areas the evidence suggests the contribution of entrepreneurial start-ups to the economy is limited and in some cases can be potentially damaging. We make no claims to originality in pointing this out. It is well known, widely discussed, and articulated much more eloquently in book form by Shane (2008). What we hope to have done is start to explore why this bias exists, by unpicking some of its supply and demand conditions, and so understand why it has been so hard to budge.

Unfortunately, this is needed because policymakers in many countries are not only seemingly unaware of these advances in understanding, but have often been captured by well-funded lobbying groups who are unconcerned with nuanced reflection on uncertain, incomplete, and sometimes conflicting evidence. For countries without these lobbying groups, across the board policy enthusiasm for entrepreneurial start-ups, no matter their quality, might be seen as another policy fad. As Tony Judd (2010) remarked, “ill fares the land” that buys into these fads without understanding their biases and their history.

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## REFERENCES

Acs, Z. J. and D. B. Audretsch (1990), *Innovation and Small Firms*. MIT Press: Cambridge, MA.

- Almeida, P. and B. Kogut (1997), 'The exploration of technological diversity and the geographic localization of innovation,' *Small Business Economics*, **9**, 21–31.
- Armour, J. and D. Cumming (2006), 'The legislative road to Silicon Valley,' *Oxford Economic Papers*, **58**, 596–635.
- Anderson, P. (2009), *Spectrum: From Left to Right in the World of Ideas*. Verso: London, UK.
- Astebro, T. (2003), 'The Return to independent invention: evidence of unrealistic optimism, risk seeking or skewness loving?' *Economic Journal*, **113**(484), 226–239.
- Audretsch, D.B. (1995), 'Innovation, growth and survival,' *International Journal of Industrial Organization*, **13**, 441–457.
- Audretsch, D. B. (2007), 'Entrepreneurship capital and economic growth,' *Oxford Review of Economic Policy*, **23**(1), 63–78.
- Auerswald, P. E. and L. M. Branscomb (2003), 'Valleys of death and Darwinian Seas: financing the invention to innovation transition in the United States,' *Journal of Technology Transfer*, **28**, 227–239.
- Avnimelech, G. and M. Teubal (2006), 'Creating venture capital industries that co-evolve with high tech: insights from an extended industry life cycle perspective of the Israeli experience,' *Research Policy*, **35**, 1477–1498.
- Baldwin, J. R. (1998), 'Were small producers the engines of growth in the Canadian Manufacturing Sector in the 1980s?' *Small Business Economics*, **10**, 349–364.
- Bartelsman, E., S. Scarpetta and F. Schivardi (2005), 'Comparative analysis of firm demographics and survival: evidence from micro-level sources in OECD countries,' *Industrial and Corporate Change*, **14**(3), 365–391.
- Baumol, W.J. (1996), 'Entrepreneurship: productive, unproductive, and destructive,' *Journal of Business Venturing*, **11**, 3–22.
- Baumol, W. (2010), *The Microtheory of the Innovative Entrepreneur*. Princeton University Press: Princeton, NJ, and Oxford, UK.
- Beck, T., A. Demircuc-Kunt and R. Levine (2005), 'SMEs, growth and poverty: cross-country evidence,' *Journal of Economic Growth*, **10**, 199–229.
- Benz, M. and B. Frey (2008), 'Being independent is a great thing: Subjective evaluations of self-employment and hierarchy,' *Economica*, **75**, 362–383.
- Binder, M. and A. Coad (2013), 'Life satisfaction and self-employment: a matching approach,' *Small Business Economics*, **40**(4), 1009–1033.
- Birch, D. L. (1987), *Job Creation in America: How our Smallest Companies Put the Most People to Work*. Free Press: New York, NY.
- Blanchflower, D. G. and A. J. Oswald (1998), 'What makes an entrepreneur?' *Journal of Labor Economics*, **16**(1), 26–60.
- Blanchflower, D. G. (2004), 'Self-employment: more may not be better,' *Swedish Economic Policy Review*, **11**, 15–73.

- Block, F. (2008), 'Swimming against the current: the rise of a hidden developmental state in the United States,' *Politics and Society*, **36**(2), 169–206.
- Bottazzi, L. and M. Da Rin (2002), 'European venture capital,' *Economic Policy*, **17**(34), 231–269.
- Bradley, D. E. and J. A. Roberts (2004), 'Self-employment and job satisfaction: investigating the role of self-efficacy, depression and seniority,' *Journal of Small Business Management*, **42**(1), 37–58.
- Branstetter, L., F. Lima, L. J. Taylor and A. Venancio (2013), 'Do entry regulations deter entrepreneurship and job creation?: evidence from recent reforms in Portugal,' *Economic Journal*. forthcoming.
- Briggs, A. (1968), 'The world economy: Interdependence and planning,' in C. L. Mowat (ed.), *The New Cambridge Modern History*, Vol. 12. Cambridge University Press: Cambridge, UK.
- Brouwer, P., J. De Kok and P. Fris (2005), 'Can firm age account for productivity differences?' *EIM SCALES-paper N200421*. Zoetermeer, The Netherlands.
- Brown, C., J. Hamilton and J. Medoff (1990), *Employers Large and Small*. Harvard University Press: Cambridge (MA).
- Calvo, J.L. (2006), 'Testing Gibrat's law for small, young and innovating firms,' *Small Business Economics*, **26**, 117–123.
- Camerer, C. and D. Lovo (1999), 'Overconfidence and excess entry: an experimental approach,' *American Economic Review*, **89**, 306–318.
- Castany, L., E. Lopez-Bazo and R. Moreno (2005), 'Differences in total factor productivity across firm size: a distributional analysis,' *University of Barcelona Working Paper*. Barcelona, Spain.
- Chandler, A. D. (1990), *Scale and Scope: The Dynamics of Industrial Capitalism*. Belknap Press of Harvard University Press: Cambridge, MA.
- Coad, A. (2009), "'The growth of firms: a survey of theories and empirical evidence",' Edward Elgar, Cheltenham: UK and Northampton, MA, USA.
- Coad, A. (2010), 'Neoclassical vs. evolutionary theories of financial constraints: Critique and prospectus,' *Structural Change and Economic Dynamics*, **21**(3), 206–218.
- Coad, A., J. Frankish, R. Roberts and D. Storey (2013), 'Growth paths and survival chances: an application of Gambler's Ruin theory,' *Journal of Business Venturing*, **28**, 615–632.
- Coad, A. and J. P. Tamvada (2012), 'Firm growth and barriers to growth among small firms in India,' *Small Business Economics*, **39**, 383–400.
- Cohen, W. M. and S. Klepper (1996), 'A reprise of size and R&D,' *Economic Journal*, **106**, 925–951.
- Comanor, W. S. (1967), 'Market structure, product differentiation, and industrial research,' *Quarterly Journal of Economics*, **81**, 639–657.
- Cowling, M., P. Nightingale and J. Siepel (2011), 'The 30 year climb: The relative dynamics of entrepreneurial inefficiency,' unpublished manuscript.

- Czarnitzki, D., K. Hussinger and C. Schneider (2011), 'Wacky' patents meet economic indicators,' *Economics Letters*, **113**, 131–134.
- Dannreuther, C. (2009), 'The political economy of entrepreneurship,' *International Small Business Journal*, **27**(1–2), 522–524.
- Davidsson, P. (2007), 'Strategies for dealing with heterogeneity in entrepreneurship research,' *Paper presented August 7<sup>th</sup> at the Academy of Management Conference*. Philadelphia, PA.
- Davidsson, P., L. Lindmark and C. Olofsson (1998), 'The extent of overestimation of small firm job creation: an empirical examination of the regression bias,' *Small Business Economics*, **11**, 87–100.
- Davis, S., J. Haltiwanger and S. Schuh (1996), *Job creation and Destruction*. MIT Press: Cambridge, MA.
- Dennis, W. J. (2011), 'Entrepreneurship, small business and public policy levers,' *Journal of Small Business Management*, **49**(1), 92–106.
- Disney, R., J. Haskel and Y. Heden (2003), 'Restructuring and productivity growth in UK manufacturing,' *Economic Journal*, **113**(489), 666–694.
- Easley, C.E. and E.B. Roberts (2010), 'Cutting your teeth: learning from entrepreneurial experiences,' . Unpublished.
- Evans, G. H. Jr. (1949), 'The entrepreneur and economic theory: a historical and analytical approach,' *American Economic Review Papers and Proceedings*, **39**(3), 336–348.
- EVCA (2010), 'Closing gaps and moving up a gear: The next stage of venture capital's evolution in Europe'. EVCA: Brussels, Belgium.
- Foster, L., J. Haltiwanger and C. Syverson (2008), 'Reallocation, firm turnover, and efficiency: selection on productivity or profitability?' *American Economic Review*, **98**(1), 394–425.
- Frankish, J., R. Roberts, A. Coad, T. Spears and D. Storey (2013), 'Do entrepreneurs really learn?: or do they just tell us that they do?' *Industrial and Corporate Change*, **22**(1), 73–106.
- Friedman, M. (1992), 'Do old fallacies ever die?' *Journal of Economic Literature*, **30**(4), 2129–2132.
- Galbraith, J. K. (1967), *The New Industrial State*. Hamish Hamilton: London, UK.
- Geroski, P.A. (1995), 'What do we know about entry?' *International Journal of Industrial Organization*, **13**, 421–440.
- Goldin, C. and R. A. Margo (1992), 'The great compression: The wage structure in the United States at mid-century,' *Quarterly Journal of Economics*, **107**(1), 1–34.
- Goldthorpe, J. H. (1984), *Order and conflict*. Oxford University Press: Oxford, UK.
- Greene, F. J., K. Mole and D. J. Storey (2004), 'Does more mean worse?: three decades of enterprise policy in the Tees Valley,' *Urban Studies*, **41**, 1207–1228.
- Hall, R.E. and S.E. Woodward (2010), 'The burden of the nondiversifiable risk of entrepreneurship,' *American Economic Review*, **100**(3), 1163–1194.

- Haltiwanger, J. C., R. S. Jarmin and J. Miranda (2010), 'Who creates jobs: small vs large vs young,' *NBER working paper 16300*. August 2010.
- Hamilton, B. H. (2000), 'Does entrepreneurship pay?: an empirical analysis of the returns to self-employment,' *Journal of Political Economy*, **108**(3), 604–631.
- Hart, P.E. and N. Oulton (1996), 'Growth and size of firms,' *Economic Journal*, **106**(438), 1242–1252.
- Harrison, B. (1994), 'The small firm myth,' *California Management Review*, **36**(3), 146–158.
- Hayek, F. A. (1945), 'The use of knowledge in society,' *American Economic Review*, **35**(4), 519–530.
- Hayek, F. A. (1960), *The Constitution of Liberty*. Chicago University Press: Chicago, IL.
- Hebert, R. F. and A. Link (2006), 'Historical perspectives on the entrepreneur,' *Foundations and Trends in Entrepreneurship*, **2**(4), 261–408.
- Henrekson, M. (2005), 'Entrepreneurship: a weak link in the welfare state?' *Industrial and Corporate Change*, **14**(3), 437–467.
- Hogan, M. J. (1989), *The Marshall Plan: America, Britain and the Reconstruction of Western Europe, 1947–1952*. Cambridge University Press: Cambridge, UK.
- Holtz-Eakin, D. (2000), 'Public policy toward entrepreneurship,' *Small Business Economics*, **15**(4), 283–291.
- Hölzl, W. (2014), 'Persistence, survival and growth: a closer look at twenty years of fast-growing firms in Austria,' *Industrial and Corporate Change*, **23**(1), 1–38.
- Hughes, A. (2008), 'Entrepreneurship and innovation policy: retrospect and prospect,' *Political Quarterly*, **79**, 133–152.
- Hvide, H. K. (2009), 'The quality of entrepreneurs,' *Economic Journal*, **119**, 1010–1035.
- Idson, T.L. (1990), 'Establishment size, job satisfaction, and the structure of work,' *Applied Economics*, **22**, 1007–1018.
- Jahoda, M., P. F. Lazarsfeld and H. Zeisel (1971), *Marienthal: The Sociography of an Unemployed Community*. Aldine-Atherton: Chicago, IL.
- Judt, T. (2010), *Ill Fares the Land*. Penguin Press: London, UK.
- Kirzner, I. (1997), 'Entrepreneurial discovery and the competitive market process: an Austrian approach,' *Journal of Economic Literature*, **35**, 60–85.
- Kleinknecht, A. and B. Verspagen (1989), 'R&D and market structure: The impact of measurement and aggregation problems,' *Small Business Economics*, **1**, 297–301.
- Klepper, S. (2001), 'Employee startups in high-tech industries,' *Industrial and Corporate Change*, **10**(3), 639–674.
- Landström, H., G. Harirchi and F. Åström (2012), 'Entrepreneurship: exploring the knowledge base,' *Research Policy*, **41**, 1154–1181.
- Lerner, J. (2010), '"The future of public efforts to boost entrepreneurship and venture capital",' *Small Business Economics*, **35**, 255–264.

- Lotti, F. and E. Santarelli (2004), 'Industry Dynamics and the Distribution of Firm Sizes: A Nonparametric Approach,' *Southern Economic Journal*, **70**(3), 443–466.
- Love, J. H. and B. Ashcroft (1999), 'Market versus corporate structure in plant-level innovation performance,' *Small Business Economics*, **13**(2), 97–109.
- Lucas, R.E. (1978), 'On the size distribution of business firms,' *Bell Journal of Economics*, **9**(2), 508–523.
- Macpherson, A. and R. Holt (2007), 'Knowledge, learning and small firm growth: a systematic review of the evidence,' *Research Policy*, **36**, 172–192.
- Mansfield, E. (1962), 'Entry, Gibrat's Law, innovation and the growth of firms,' *American Economic Review*, **52**, 1023–1051.
- Mason, C. and R. Harrison (1986), 'The regional impact of public policy towards small firms in the UK,' in D. Keeble and E. Wever (eds), *New Firms and Regional Development in Europe*. Routledge: London, UK.
- Mazzucato, M. (2011), *The Entrepreneurial State*. Demos: London, UK.
- de Meza, D. (2002), 'Overlending?' *Economic Journal*, **112**, F17–F31.
- Metzger, G. (2006), 'Once bitten twice shy?: the performance of entrepreneurial re-starts,' *Discussion Paper 06-083*, ZEW. Mannheim, Germany.
- Mirowski, P. (2007), *Realism and Neoliberalism: From Reactionary Modernism to Postwar Conservatism*. Unpublished manuscript, London School of Economics online collections, UK.
- Moskowitz, T. J. and A. Vissing-Jorgensen (2002), 'The returns to entrepreneurial investment: a private equity premium puzzle?' *American Economic Review*, **92**(4), 745–778.
- Neumark, D., B. Wall and J. Zhang (2011), 'Do small businesses create more jobs?: New evidence for the United States from the National Establishment Time Series,' *Review of Economics and Statistics*, **93**(1), 16–29.
- Oosterbeek, H. and M. Van Praag (1995), 'Firm-size wage differentials in the Netherlands,' *Small Business Economics*, **7**(3), 173–182.
- Ortega-Argiles, R., M. Vivarelli and P. Voigt (2009), 'R&D in SMEs: a paradox?' *Small Business Economics*, **33**, 3–11.
- Parker, S. C. (2004), *The Economics of Self-Employment and Entrepreneurship*. Cambridge University Press: Cambridge, UK.
- Robbins, D. K., L. J. Pantuosco, D. F. Parker and B. K. Fuller (2000), 'An empirical assessment of the contribution of small business employment to US state economic performance,' *Small Business Economics*, **15**, 293–302.
- Rothwell, R. and W. Zegveld (1982), *Innovation and the Small and Medium Sized Firm*. Pinter Publishers: London, UK.
- Reynolds, P., N. Bosma, E. Autio, S. Hunt, N. De Bono, I. Servais, P. Lopez-Garcia and N. Chin (2005), 'Global entrepreneurship monitor: data collection design and implementation 1998–2003,' *Small Business Economics*, **24**, 205–231.

- Reynolds, P.D. and R.T. Curtin (2008), 'Business creation in the united states: panel study of entrepreneurial dynamics II initial assessment,' *Foundations and Trends in Entrepreneurship*, **4**(3), 155–307.
- Ruggie, J. (1982), 'International regimes, transactions, and change: Embedded liberalism in the postwar economic order,' *International Organisation*, **36**(2), 379–415.
- Salas, V., J. Sanchez-Asin and D. Storey (2012), 'Occupational choice, number of entrepreneurs and output: theory and empirical evidence with Spanish data,' Mimeo.
- Sanandaji, T. (2010), 'Self-employment does not measure entrepreneurship,' Mimeo: University of Chicago.
- Santarelli, E. and M. Vivarelli (2002), 'Is subsidizing entry an optimal policy?' *Industrial and Corporate Change*, **11**(1), 39–52.
- Santarelli, E. and M. Vivarelli (2007), 'Entrepreneurship and the process of firms' entry, survival and growth,' *Industrial and Corporate Change*, **16**(3), 455–488.
- Scherer, F. M. (1965), 'Firm size, market structure, opportunity, and the output of patented inventions,' *American Economic Review*, **57**, 1097–1125.
- Scherer, F. M. (1991), 'Changing perspectives on the firm size problem,' in Z. J. Acs and D. B. Audretsch (eds), *Innovation and Technological Change: An International Comparison*. Harvester Wheatsheaf: New York, NY.
- Scherer, F. M. and D. Ross (1990), *Industrial Market Structure and Economic Performance*. Houghton Mifflin: Boston, MA.
- Schumpeter, J. A. (1942), *Capitalism, Socialism and Democracy*. George Allen and Unwin: New York, NY.
- Schumpeter, J.A. (1911), *Theorie der wirtschaftlichen Entwicklung*. Duncker & Humblot: Leipzig. Revised and reprinted in English as Schumpeter J.A. (1934). *The Theory of Economic Development*. Cambridge: Harvard University Press.
- Shane, S. (2000), 'Prior knowledge and the discovery of entrepreneurial opportunities,' *Organization Science*, **11**(4), 448–469.
- Shane, S. and S. Venkataraman (2000), 'The promise of entrepreneurship as a field of research,' *Academy of Management Review*, **25**(1), 217–226.
- Shane, S. (2008), *The Illusions of Entrepreneurship: The Costly Myths that Entrepreneurs, Investors and Policy Makers Live By*. Yale University Press: New Haven, CT.
- Shane, S. (2009), 'Why encouraging more people to become entrepreneurs is bad public policy,' *Small Business Economics*, **33**(2), 141–149.
- Smallbone, D., R. Baldock and S. Burgess (2002), 'Targeted support for high-growth start-ups: Some policy issues,' *Environment and Planning C*, **20**(2), 195–209.
- Sorensen, J. B. and T. E. Stuart (2000), 'Aging, obsolescence, and organizational innovation,' *Administrative Science Quarterly*, **45**, 81–112.
- Stam, E. (2010), 'Growth beyond Gibrat: firm growth processes and strategies,' *Small Business Economics*, **35**(2), 1–7.

- Storey, D. J. (1998), *The Ten Percenters. Fourth Report: Fast Growing SMEs in Great Britain*. Deloitte & Touche Tohmatsu: London, UK.
- Storey, D. J. (1994), *Understanding the Small Business Sector*. Routledge: London, UK.
- Storey, D. J. (2006), 'Evaluating SME policies and programmes: Technical and political dimensions,' in M. Casson, B. Yeung, A. Basu and N. Wadeson (eds), *The Oxford Handbook of Entrepreneurship*. Oxford University Press: Oxford, UK, pp. 248–278.
- Storey, D. J. (2011), 'Optimism and chance: the elephants in the entrepreneurship room,' *International Small Business Journal*, **29**(4), 303–321.
- Tamvada, J. P. (2010), 'Entrepreneurship and welfare,' *Small Business Economics*, **34**, 65–79.
- Troske, K. R. (1999), 'Evidence on the employer size-wage premium from worker-establishment matched data,' *Review of Economics and Statistics*, **81**(1), 15–26.
- Van Horn, R. and P. Mirowski (2009), 'The rise of the Chicago School of Economics and the birth of neoLiberalism,' in P. Mirowski and D. Plehwe (eds), *The Road from Mont Pèlerin: The Making of the Neoliberal Thought Collective*. Harvard University Press: Boston, MA, pp. 149–163.
- van Praag, C. M. and P. H. Versloot (2007), 'What is the value of entrepreneurship?: a review of recent research,' *Small Business Economics*, **29**, 351–382.
- Vivarelli, M. (2004), 'Are all the potential entrepreneurs so good?' *Small Business Economics*, **23**, 41–49.
- Vivarelli, M. (2011), 'Baumol, W. J.: the microtheory of innovative entrepreneurship,' *Journal of Economics*, **103**, 199–202.
- Winter-Ebmer, R. and J. Zweimüller (1999), 'Firm-size wage differentials in Switzerland: evidence from job-changers,' *American Economic Review Papers and Proceedings*, **89**(2), 89–93.



