

# CHAPTER 1

## The Connection between Entrepreneurship and Economic Prosperity: Theory and Evidence

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### **Introduction**

This chapter<sup>1</sup> argues that there is a crucial connection between entrepreneurship and economic prosperity. Although some readers might consider the relationship almost a tautology—after all, don't we need entrepreneurs if we are to have any goods and services at all?—it has been an ironic twist of history that economic theory, particularly in the first half of the twentieth century, largely forgot the importance of the entrepreneur. Perhaps abetted by this disturbing theoretical trend, policy makers around the world, particularly in the explicitly communist governments, ignored the

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1 The author thanks Peter Klein, Eric C. Mota, David Gordon, Ryan Murphy, and Lawrence McQuillan for research suggestions. John Haltiwanger provided data to allow for the reproduction of a figure.

importance of institutional encouragement for socially beneficial entrepreneurship.

Fortunately, both economic theorists and policy makers alike have recognized the shortsightedness of such a stance. There is a growing recognition that a society's economic prosperity depends not merely on "education" or "investment," but also specifically on entrepreneurship.

This essay will clarify and provide evidence for such a dependence. We start by providing a conceptual framework of entrepreneurship, before turning to historical examples and empirical studies documenting the importance of entrepreneurs in delivering material benefits to the masses.

## The conceptual framework

Two of the top names associated with the theory of entrepreneurship are Joseph Schumpeter and Israel Kirzner, whose views are often contrasted with each other. We will review their approaches in turn.

Schumpeter famously invoked the term "creative destruction" to describe the volatile development occurring in a capitalist system:

The opening up of new markets, foreign or domestic, and the organizational development from the craft shop and factory to such concerns as U.S. Steel illustrate the process of industrial mutation that incessantly revolutionizes the economic structure *from within*, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in. (Schumpeter 1942/1994: 83)

In addition to being a theorist, Schumpeter was also a master historian of economic thought. In an essay (1949/2008) tracing the various notions of entrepreneurship by various writers, Schumpeter distills the usage in which it is the entrepreneur who sees a *new* opportunity and deploys factors of production accordingly. The entrepreneur is a creative leader, who

earns a return that is not simply a return on his or her labour, nor is it merely interest on invested capital. The entrepreneur is not a risk-bearer per se—for it is the capitalist’s funds that are at risk—but rather the entrepreneur is the one who *decides in the face of uncertainty* (p. 256).

Indeed, in a previous essay (1947/2008), Schumpeter first contrasts two ways in which the economy can respond to a change in the data. One way is an “adaptive response,” in which people engage in more (or less) of the same basic activities, while a “creative response” occurs when firms in the economy do “something that is outside the range of existing practice” (p. 222). Schumpeter distinguishes between the mere managers who oversee adaptive responses and the true entrepreneur, who engages in creative responses. “[T]he entrepreneur and his function are not difficult to conceptualize: the defining characteristic is simply the doing of new things or the doing of things that are already being done in a new way (innovation)” (p. 223). Schumpeter goes on to make another useful distinction when he writes, “The inventor produces ideas, the entrepreneur ‘gets things done,’” which he illustrates in this way: “[T]he fact that Greek science had probably produced all that is necessary in order to construct a steam engine did not help the Greeks or the Romans to build a steam engine” (p. 224).

Israel Kirzner has written extensively on entrepreneurship, elaborating on the approach of his teacher, Ludwig von Mises (e.g., 1952). Kirzner (1973) lays out his vision of the market process, and how entrepreneurs acting in competition move the economy towards equilibrium (or state of coordination, in a more Hayekian [1937] approach). In the tradition of the Austrian School, in a state of long-run equilibrium across all markets, labour receives its discounted marginal product in the form of wages, while land and capital goods owners receive rental payments that are also in accordance with their contribution to output. These wages and rents are *discounted*, however, depending on how far removed in the future the final product is from the moment they are paid. This allows for the capitalists to earn a pure interest return on their invested funds, which accrues with the passage of time simply because present goods are more valuable than future goods.

However, in the real world we are never in such a fictitious state of economy-wide (and perpetual) equilibrium. The “data” of the market—consumer preferences, resource supplies, and technological know-how—are constantly changing. At any given moment, some enterprises are channeling too many resources into the production of certain goods and services, while other enterprises are not grand enough. It is the alert entrepreneurial class who perceive these misallocations before their more complacent peers, and in the process earn *pure profits* which cannot be decomposed into wages, rents, or interest. As Kirzner explains:

The pure entrepreneur... proceeds by his alertness to discover and exploit situations in which he is able to sell for high prices that which he can buy for low prices. Pure entrepreneurial profit is the difference between the two sets of prices. It is not yielded by exchanging something the entrepreneur values less for something he values more highly. It comes from discovering sellers and buyers of something for which the latter will pay more than the former demand. The discovery of a profit opportunity *means the discovery of something obtainable for nothing at all*. No investment at all is required; the free ten-dollar bill is discovered to be already within one’s grasp. (Kirzner, 1973: 48, emphasis in original.)

In terms of technical theory, Schumpeter’s and Kirzner’s treatment of the nature of entrepreneurship is quite similar. However, at the very least the flavour of their writings is quite different. Schumpeter’s entrepreneur is a *disruptor* who *creates* new products first in his mind and then makes them a reality, whereas Kirzner’s entrepreneur is a *coordinator* who simply *observes* the profit opportunities waiting to be grasped.

I agree with Palagashvili (2015) who writes that on the issue of promoting prosperity, the alleged tension between the “disequilibrating” Schumpeterian entrepreneur and the “equilibrating” Kirznerian entrepreneur “is unimportant because both roles... improve society’s material standard of living and, hence, each is crucial to long-run economic prosperity” (p. 7). She also cites Boudreaux (1994) who argues that even

Schumpeter's entrepreneur moves the economy towards equilibrium, from a broader vantage point.

In this essay, we endorse the conceptual framework offered in Baumol, Litan, and Schramm (2007). Rather than endorsing "entrepreneurship" or "capitalism" per se, in this book the authors identify four types of capitalism: (1) entrepreneurial, (2) big-firm, (3) state-directed, and (4) oligarchic. Within this taxonomy, the authors argue that the optimal arrangement for economic growth is a mixture of the first two types:

[I]t takes a mix of innovative firms *and* established larger enterprises to make an economy really tick. A small set of entrepreneurs may come up with the "next big things," but few if any of them would be brought to market unless the new products, services, or methods of production were refined to the point where they could be sold in the marketplace at prices such that large numbers of people or firms could buy them. It is that key insight that led us to the conclusion that the *best* form of "good capitalism" is a blend of "entrepreneurial" and "big-firm" capitalism... (Baumol, Litan, and Schramm, 2007: ix, emphasis in original.)

Although they don't themselves motivate it as such, we can interpret their framework as uniting the perspectives of Schumpeter and Kirzner. If the goal is maximum economic efficiency in the long run, to provide the highest possible standard of living to citizens within the unavoidable constraints imposed by nature, then we need bold, innovative entrepreneurs who disrupt existing modes of production by introducing entirely new goods and services, but we also need vigilant, alert entrepreneurs who spot arbitrage opportunities in the existing price structure and quickly move to whittle them away. In other words, the work of Baumol et al. shows that we need the Schumpeterian entrepreneur to disrupt the status quo with innovations, but we also need the Kirznerian entrepreneur to transmit these innovations throughout the economy through imitation and slight adjustments.

As we will see in the remainder of this chapter, the conceptual framework we have just developed can effectively accommodate historical anecdotes connecting entrepreneurship to prosperity, as well as the empirical studies on the topic.

## **Examples of the heroic and pioneering entrepreneur**

This section provides four historical examples of entrepreneurship that helped deliver our modern standard of living. I have deliberately chosen them to emphasize that successful innovation is *not* simply a matter of invention, but instead involves the nuts and bolts of production, distribution, and marketing.

John D. Rockefeller was, by all accounts, a humble and generous man, who by his death had donated some \$550 million to philanthropic causes. And though some critics objected to his “ruthless” tactics in business, the ultimate reason Rockefeller captured 90 percent of the refining market was his ability to cut costs: He drove the price of kerosene from 58 cents down to 8 cents per gallon. John Archbold, a colleague who would become a vice president of Standard Oil, said, “You ask me what makes Rockefeller the unquestioned leader in our group. Well, it is simple... Rockefeller always sees a little further ahead than any of us—and then he sees around the corner” (Folsom, 2003: 83, 93–94).

An anecdote illustrates the ability of Charles Schwab—the famous steel magnate, who should not be confused with the later financier of the same name—to take a “given” factory and labour force, and wring more output from them. Historian Burt Folsom relays Schwab’s story of when he visited an unproductive steel mill under his control:

It was near the end of the day; in a few minutes the night force would come on duty. I turned to a workman who was standing beside one of the red-mouthed furnaces and asked him for a piece of chalk.

“How many heats has your shift made today?” I queried.

“Six,” he replied

I chalked a big “6” on the floor, and then passed along without another word. When the night shift came in they saw the “6” and asked about it.

“The big boss was in here today,” said the day men. “He asked us how many heats we had made, and we told him six. He chalked it down.”

The next morning I passed through the same mill. I saw that the “6” had been rubbed out and a big “7” written instead. The night shift had announced itself. That night I went back. The “7” had been erased, and a “10” swaggered in its place. The day force recognized no superiors. Thus a fine competition was started, and it went on until this mill, formerly the poorest producer, was turning out more than any other mill in the plant. (Quoted in Folsom, 2003: 63–64)

It’s easy enough to understand how increases in material efficiency—the ability to take a given amount of physical inputs and create a greater amount of physical output—could give John D. Rockefeller or Charles Schwab a competitive advantage. But entrepreneurial innovation isn’t just limited to physical production. It also includes new techniques in marketing. For example, Schweikart and Doti (2010) explained the secret behind the success of a household name in beauty products:

Mary Kay Ash took with her a decade’s worth of experience and knowledge of the direct sales industry and, in 1963, decided to launch her own company, Beauty by Mary Kay, in Dallas. Joined by her son, Richard Rogers, Ash targeted a part of the market that the largest competitor, Avon, had ignored: skin care. Simple door-to-door sales no longer worked, however, so Ash used the concept of a “party”—a two-hour, in-home beauty show in the residences of women who agreed to act as hostesses... Ash realized that the key to successful

sales of any good product is the sales force, causing her to explore new and unconventional motivational techniques. She handed out bonuses and monetary prizes... (Schweikart and Doti, 2010: 347)

Eventually, Mary Kay Ash would increase the incentives for her best representatives so that she was giving them signature pink Cadillacs. By the late 1980s, “Mary Kay Cosmetics had more than 120,000 employees... all of whom could compete for mink coats, diamonds, resort vacations, and other luxuries. The pink Cadillac became... literally, a ‘cosmetic’ symbol of success” (Schweikart and Doti, 2010: 348).

As I will stress in this chapter, often entrepreneurial innovation occurs in complementary waves, where individual firms build off of the success and opportunities afforded by others. For example, no one genius could invent the modern supermarket; the suppliers had to first innovate, as well. Schweikart and Doti explain:

Well after the turn of the [twentieth] century, grocery stores still had the old-fashioned touch, using stock clerks to take items from the shelves for the customer and box the purchases... [T]hat tradition faded when a Memphis grocer named *Clarence Saunders applied assembly-line techniques to grocery store shopping in 1916 at his Piggly Wiggly store*. All items were marked with a price and displayed on shelves. The customer walked down the store aisles with a basket and pulled products off the shelf for checkout with a clerk in front of the store. *Saunders’s strategy only worked when products came in packages that consumers could clearly identify*. Packaging already had become an integral part of selling a number of products, especially foods... Rather than emphasizing the crackers in the box, Nabisco’s Uneeda advertising campaign, introduced in 1898, stressed Nabisco’s patented “In-Er-Seal” package that kept crackers fresh. Before the appearance of packaged products, grocery stores kept goods in bins, filling the customer’s request for, say, a pound of flour from an open bin. Unfortunately, any number of foreign objects, including codfish, kerosene, salt, floor sweepings, or even lost earrings, could fall into



the bins, then into the customer’s package. Of course, Nabisco was not the only food processor to use packages. Heinz’s vegetables and sauces, Campbell’s soups, and *many other products were sold in packages by 1900. That practice allowed grocery owners like Saunders to rearrange their stores to feature shelved items instead of large bins.* (Schweikart and Doti, 2010: 257, emphasis added.)

These are the types of entrepreneurial success stories that our conceptual framework must accommodate. Yet in order to appreciate the work of economists such as Schumpeter and Kirzner—and the synthesis of Baumol, Litan, and Schramm (2007) that we have consciously embraced for this chapter—the next section explains how entrepreneur was virtually snuffed out in twentieth century economic theory.

### **The fall and rise of entrepreneurship in economic theory**

The layperson might assume that entrepreneurship—being so central to the market economy—would occupy a dominant place in economic theory. And indeed, it *is* true that business schools offer extensive training on the theory of and practice of entrepreneurship and management. However, the situation is more nuanced when it comes to the theoretical models developed by the purely academic economists.

Specifically, as economics matured out of its beginnings as “political economy” discussed by the “moral philosophers” in the eighteenth and nineteenth centuries, it became more mathematical and mechanistic, taking the apparent epitome of science—classical mechanics—as its guide. Modern economists can debate the pros and cons of this development, but one undeniable casualty of this move towards formalization was the place of the entrepreneur in formal economic theory.

In what some historians of economic thought dub the first work of political economy, even predating Adam Smith, Richard Cantillon’s 1755 *Essai sur la Nature du Commerce en Général* devoted an entire chapter to a verbal “model” of a city’s economy (including the surrounding country-

side), which was composed of *entrepreneurs* (a term credited to Cantillon), labourers, landowners, and government officials. In Cantillon's discussion, it is the entrepreneurs who bear the risk in each business undertaking. Here is a typical paragraph:

All these entrepreneurs become consumers and customers of each other, the draper of the wine merchant, and vice versa. In a state, they proportion themselves to the customers or their consumption. If there are too many hat makers in a city or on a street for the number of people who buy hats, the least patronized must go bankrupt. On the other hand, if there are too few, it will be a profitable business, which will encourage new hat makers to open shops and in this manner, entrepreneurs of all kinds adjust themselves to risks in a state. (Cantillon, 1755/2010: 75)

Later on, the famous J.B. Say, from whom we get Say's Law, continued to use the term "entrepreneur." One English translator rendered it as "adventurer" to capture the sense in which Say used it. Writing in 1965, management icon Peter Drucker praised Say's usage, arguing that the French economist deployed the term "as a manifesto and a declaration of dissent: the entrepreneur upsets and disorganizes" (quoted in Baumol, Litan, and Schramm, 2007: 3).

However, despite this early focus on entrepreneurship, the formalization of economics expunged the entrepreneur from standard models.<sup>2</sup> This is completely understandable, in retrospect: After all, if a major role of the entrepreneur is to upset the existing order—to show that the status quo is suboptimal—then it is difficult to incorporate that element in a model with continuous functions and in which all of the agents (consumers, firms, government officials) maximize a function capturing their respective payoffs.

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2 Ironically, though Adam Smith is famously connected with the term "undertaker," the great British classical economists did not stress entrepreneurship as much as their French peers, as Schumpeter (1949/2008: 254–255) observes.

Over the years, some of the giants in economics were well aware of this sterility in formal economic theory. For example, Ronald Coase, who would later win the Nobel Prize, expressed the situation in 1988:

The entities whose decisions economists are engaged in analyzing have not been made the subject of study and in consequence lack any substance. The consumer is not a human being but a consistent set of preferences. The firm, to an economist, as Slater has said, “is effectively defined as a cost curve and a demand curve, and the theory is simply the logic of optimal pricing and input combinations.” (Coase and Slater, quoted in Baumol, Litan, and Schramm, 2007: 14)

Another Nobel laureate, Friedrich Hayek, also lamented the lack of entrepreneurship in formal economic models. Specifically, the model of “perfect competition” as it had developed in the textbooks in the first half of the twentieth century would, ironically, *exclude* the everyday activities that real-world businesspeople use to compete! As Hayek put it:

The peculiar nature of the assumptions from which the theory of competitive equilibrium starts stands out very clearly if we ask which of the activities that are commonly designated by the verb “to compete” would still be possible if those conditions were all satisfied... I believe that the answer is exactly none. Advertising, undercutting, and improving (“differentiating”) the goods or services produced are all excluded by definition—“perfect” competition means indeed the absence of all competitive activities. (Hayek, 1948: 96)

It is against this backdrop of an austere modeling of the economy, in which there is no role for genuine innovation, that we must appreciate the contributions of those modern economists such as Schumpeter, Kirzner, and Baumol, who have kept alive the central focus on entrepreneurship in their research.

The purpose of this brief section on the history of economic thought is not merely pedagogical. There are genuine policy implications stemming

from the two different approaches to models of the economy (and competition in particular). Specifically, models of so-called “perfect competition” all too often give the impression that if firms in the real world have too much “market power,” then the industry in question must be failing to provide the full social benefits possible to workers and consumers. Such thinking drives antitrust legislation and decisions about merger approval and other business practices.

Economist Dominick Armentano has built a career using the findings of entrepreneurship research in order to criticize the conventional approach to antitrust. Rather than viewing government breakup of large firms as promoting healthy competition which keeps wages high and prices low, Armentano argues that such policies can perversely cripple the incentive for firms to innovate. If a particular firm has a large share of its market, this need not be a sign of harm. On the contrary, so long as there are no institutional barriers to entry, large market share is *prima facie* evidence that a firm has been serving customers well, by transforming inputs into outputs more efficiently than its rivals. After laying out his theoretical framework, Armentano (1972) spends an entire book refuting what he calls the “myths” of antitrust. Drawing on the US experience, Armentano documents historical case after case in which antitrust policy has been used by companies to *stifle* competition from their more capable peers.

For our purposes in this chapter, the message is that if policy makers wish to reap the full benefits of entrepreneurial innovation for society at large, they must take care not to make decisions based on economic models that assume away the very problems that real-world entrepreneurs solve. Yes, in certain models it can be shown that firms with “market power” may set output and prices in a manner that does not achieve “Pareto efficiency.” But in these types of models, *there is no need* for entrepreneurs in the first place, since the firms all use the same production function and know the demand function of their customers, the consumers have perfect information about products, and any constraints in terms of depletable resources are fully known at the outset, as is all other information relevant to determining supply and demand conditions. In short, in the world of models

touting “perfect competition,” there is no need for genuine innovation, and hence there is no downside to policies that could hinder entrepreneurship.

Yet in the real world, of course, entrepreneurship is vitally important to economic growth. Ironically, even though the earliest economic treatises placed the entrepreneur at center stage, it is only more recently that the economics profession has begun to rehabilitate the position of the entrepreneur in their formal treatment.<sup>3</sup>

### **What the literature says about the benefits of entrepreneurship**

Besides broad economic theory and compelling historical anecdotes, there is a vast empirical literature on the connection between entrepreneurship and prosperity. This section highlights just a sample of the academic studies in this arena, categorized by topic.

#### ***Economic growth***

An extensive literature documents the connection between entrepreneurship and economic growth. The studies vary in terms of the specific measure of entrepreneurship (e.g., small firms, self-employment rate, young firms, etc.) and the size of the economic unit being studied. This section can only provide a sample of the extensive work in this area. Carree and Thurik (2006) is a single collection containing reprints of some of the most important contributions.<sup>4</sup>

Carree et al. (2002) look at 23 OECD countries from 1976 to 1996. Using a two-equation model, they study (among other questions) the “equilibrium rate of business ownership” and how deviations from it can

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3 One could plausibly argue that William Baumol in particular (see, for example, Parts II and III of Baumol, 2002) has tried to insert the entrepreneur back into the conventional models of industrial organization and long-run growth.

4 Note that some of the essays reprinted in Carree and Thurik (2006) are discussed later in this chapter, as they fall more specifically under “innovation” or “job growth” than “economic growth,” which is the topic of this particular section.

hamper economic growth. They “find confirmation for the hypothesized economic growth penalty on deviations from the equilibrium rate of business ownership... An important policy implication of our exercises is that low barriers to entry and exit of businesses are necessary conditions for the equilibrium seeking mechanisms that are vital for a sound economic development” (p. 271).

Other studies in a similar vein adopt a particular measure of “entrepreneurship” and test if it is related to a stipulated measure of growth. For example, Holtz-Eakin and Kao (2003) look at the birth and death rates of firms across US states, and find that this proxy for entrepreneurship contributes to growth. Similarly, Callejón and Segarra (1999) look at manufacturing firm birth and death rates in Spain from 1980 to 1992, and conclude that this measure of “turbulence” contributes to total factor productivity growth. The results for Germany were more nuanced. At first, studies such as Audretsch and Fritsch (1996) concluded that higher firm birth/death rates in Germany in manufacturing and service were associated with lower (not higher) growth. Yet this was based on data from the 1990s. Later, in 2002, Audretsch and Fritsch found that turbulence *is* associated with higher growth, meaning that the nature of the German economy seems to have changed from the 1980s to the 1990s. (Summaries of the studies in this paragraph are taken from Audretsch and Keilbach, 2006: 303–304.)

Schmitz (1989) developed a neoclassical growth model that explicitly captures the “importance of imitation in the growth process,” in order to formalize the importance of entrepreneurship in promoting economic growth. Specifically, Schmitz departs from the more typical models in this genre by altering the specific *way* in which new knowledge is produced and disseminated among the members of an industry to more accurately match the historical record. However, his result was purely theoretical, in the sense that he derived the implications of his formal model, without actually engaging in empirical tests of its predictions versus those of the more typical models. Nonetheless, his work is important in demonstrating the possibility that the standard models of growth and “endogenous learning” may be unwittingly downplaying the role entrepreneurship plays in the real world.

Michelacci (2003) “proposes a model of endogenous growth where innovating requires both researchers, who produce inventions, and entrepreneurs who implement them” (p. 207). Michelacci assumes that individuals can choose to become either researchers or entrepreneurs. Consequently, if the relative economic rewards to entrepreneurs are too low, then the returns to R&D suffer because society is producing too many inventions without enough matching entrepreneurs to implement them. After developing the model, Michelacci illustrates it using US data from 1950 to 1990, using patent applications and the “ratio of scientists and engineers involved in R&D” as some of the inputs. The results are consistent with his hypothesis, namely, that “an increase in research effort can crowd out more socially useful entrepreneurial skills [and] reduce the growth rate” (Michelacci, 2003: 221).

Audretsch and Keilbach (2004) augment the traditional neoclassical growth models by introducing a new factor, “entrepreneurship capital,” along with the standard inputs of labour, (physical) capital, and human (knowledge) capital. According to their abstract: “A production function model including several different measures of entrepreneurship capital is then estimated for German regions. The results indicate that entrepreneurship capital is a significant and important factor shaping output and productivity.”

As we will see throughout this literature review, researchers often try to qualify previous findings by adding more subtlety. For example, in one of his chapters in *The Empirical Analysis of Entrepreneurship and Economic Growth*, Stel (2006) looks at 36 countries from 1999 to 2003 to see whether the (then) newly available *Total Entrepreneurial Activity* (TEA) rate, which measures “the relative amount of nascent entrepreneurs and business owners of young firms,” is associated with higher economic growth. Stel’s study is particularly relevant to the present chapter, because he controls for a country’s rating on the *Global Competitiveness Index* (GCI). This is significant because much of the indirect evidence on the ostensible importance of entrepreneurship could in fact be capturing the fact that economic freedom, broadly construed, contributes to various measures of entrepreneurship *and* to economic growth. But because Stel (2006) includes both the

Total Entrepreneurial Activity (TEA) rate and the Global Competitiveness Index (GCI) score in his analysis, he seeks to isolate the *additional* impact on economic growth from entrepreneurship, over and above the general benefits of a “business friendly” environment. It is worth quoting his discussion at length:

Entrepreneurship fails to be a well-documented factor in the empirical growth literature because of difficulties defining and measuring entrepreneurship... In the present chapter we have critically analyzed whether the acclaimed impact of the Total Entrepreneurial Activity (TEA) rate on economic growth stands the test of adding competing variables. There is an impact but not a simple linear one... We find that the TEA rate has a negative effect for the relatively poor countries, while it has a positive effect for the relatively rich countries. The results show that entrepreneurship matters. However, the effect of entrepreneurial activity on growth is not straightforward and can possibly be interpreted using the distinction between the Schumpeter Mark I versus Mark II regimes or the “entrepreneurial” versus “managed” economy. (Stel, 2006: 158)

Thus we see that Stel’s analysis is quite compatible with the framework of Baumol, Litan, and Schramm (2007). The similarities are even more striking when Stel offers a suggestion as to *why* there might be a negative relationship between the measured Total Entrepreneurial Activity rate and economic growth among the poorer countries. (Remember that the TEA measures the percentage of “nascent entrepreneurs” and owners of young firms in the population of a country.) Stel suggests:

The result that poorer countries fail to benefit from entrepreneurial activity does not imply that entrepreneurship should be discouraged in these countries. Instead, it may be an indication that there are not enough larger companies present in these countries. Large firms play an important role in the transformation process from a developing economy to a developed economy.” (Stel, 2006: 159)



Audretsch and Fritsch (2002), which we briefly mentioned earlier in this section, look at 74 regions in West Germany over a two-decade period, and “identify the existence of four distinct growth regimes: the entrepreneurial regime; the routinized regime; the revolving door regime; and the declining regime.” They conclude that “regional growth can result in regions focusing on large enterprises or new enterprises” (p. 113).

Although not exactly a measure of entrepreneurship *per se*, Gort and Sung (1999) looked at the US telephone industry to assess the effect of the introduction of competition on productivity growth. The US telephone industry provided a good case study because competition had been gradually introduced in the long-distance market by the early 1960s, while local service was still dominated by monopolies up through the early 1990s. Gort and Sung found both “the estimation of total factor productivity growth and the analysis of shifts in cost functions show a markedly faster change in efficiency in the effectively competitive market than for the local monopolies.” They argue that their “results support... a policy of permitting entry and increasing competition in local telephone markets” (p. 678).

For a negative result, Blanchflower (2000) looked at self-employment rates across the 22 OECD countries from 1966 to 1996, and though he did find that the self-employed reported higher job satisfaction, he did not find evidence that self-employment implied faster economic growth.<sup>5</sup>

### ***Innovation***

The connection between innovation and entrepreneurship is intimate. Indeed, in 1985 Peter Drucker wrote a book devoted to the topic. And as we explained in earlier sections, many writers use the very term “entrepreneur” to *mean* the person in a market economy who pioneers new products, services, and delivery techniques. As Drucker puts it, “Innovation is

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5 However, Blanchflower (2000) specifically tested whether *changes* in the self-employment rate were associated with higher real GDP growth, and found that they were not. Some readers might have assumed that higher *levels* of self-employment would be associated with higher real GDP growth.

the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service” (1985: 19).

In 1990, Acs and Audretsch relied on a new (at that time) data set in order to refine our understanding of the relationship between firm size and economic variables of interest, including innovation. Specifically, they computed the innovation rate (defined as the number of innovations divided by number of employees) among large and small firms, then looked at the difference in these rates to see if firm size were correlated with innovation. Looking at US data for 1982, they found that in general, smaller firms were associated with higher rates of innovations. However, their results differed significantly depending on the industry. For example, in the tire industry, “the large-firm innovation rate exceeded the small-firm innovation rate by 8.46, or by about 8 innovations per 1,000 employees” (Acs and Audretsch, 1990: 50–52). On the other end of the spectrum, the industry classification of “scales and balances” had an excess of 8 innovations per 1,000 employees among *small* firms, relative to their large peers. Stepping back to summarize some of their findings, the authors explain:

[C]ontrary to much of the conventional wisdom, innovative activity is apparently hindered, not promoted, in concentrated markets. The evidence also suggests that there tends to be more innovative activity in industries consisting of larger and not smaller firms. However... *we find that, in fact, small firms tend to have the innovative advantage in industries consisting of predominantly large firms.* This is consistent with the notion that small firms play an important role in introducing new products even in industries dominated by large firms. (Acs and Audretsch, 1990: 147, emphasis added.)

Thus, the empirical patterns Acs and Audretsch discovered are consistent with the framework advocated by Baumol, Litan, and Schramm (2007). Namely, rather than asking whether small or large firms are most conducive to innovation, the reality seems to be that they complement each other, with younger start-ups providing fresh ideas which are then distributed through older, more established channels.

Similarly, Prusa and Schmitz (1991) examine US data from the PC software industry from 1982–1987. They “find that new firms have a comparative advantage (over established firms) in *creating* new software categories, while established firms have a comparative advantage in developing subsequent improvements in *existing* categories” (p. 339, emphasis in original).

Brunner (1991) looks at the Indian computer industry and “finds that entrepreneurial start-ups provided a significant share of the innovative activity” (quoted in Acs and Audretsch, 1992: 57).

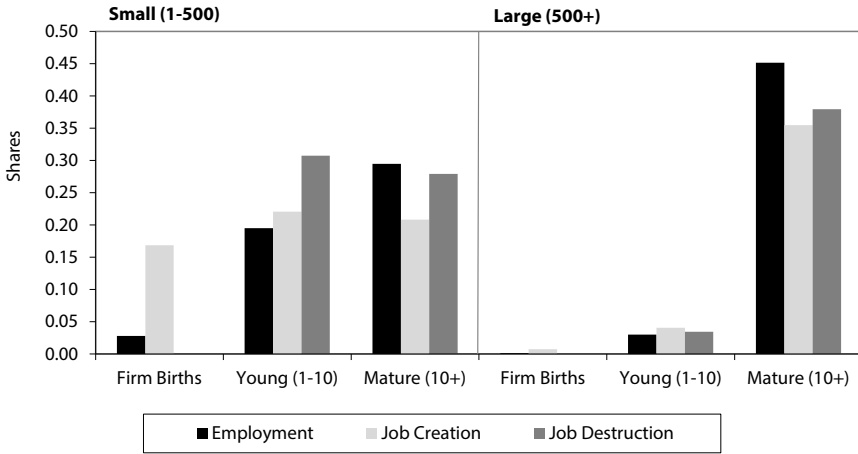
### ***Job creation***

The connection between entrepreneurship and job creation is commonsensical, though the precise nature of the relationship is a topic requiring quantitative study. For example, political figures often invoke the image of small business owners being the “engines of job creation” and therefore deserving of careful regulatory and tax treatment. However, the connection between *small* firms and job growth has been a disputed topic among scholars.

Early studies (Birch, 1979, for instance) documented empirically that small- and medium-sized businesses created relatively more jobs than larger firms. However, more recently critics raised methodological objections to such studies (see, for example, Davis, Haltiwanger, and Schuh, 1996), arguing that these earlier studies often lacked suitable data, or that they didn’t distinguish between gross and net job creation. In this context, Neumark, Wall, and Zhang (2011) reaffirmed the original orthodoxy (and conventional wisdom), by taking care to avoid all such methodological pitfalls. Specifically, they used US data from the National Establishment Time Series covering the period 1992 to 2004, and found that larger firms were indeed associated with lower rates of net job growth.

Yet that wasn’t the end of the story. Haltiwanger, Jarmin, and Miranda (2013) introduced an additional complication. Using data from the US Census Bureau Business Dynamics Statistics and Longitudinal Business Database covering the period from 1976 to 2005, they agree with Neumark, Wall, and Zhang that “when we do not control for firm age, we find an inverse relationship between net growth rates and firm size,” although even

**Figure 1: Shares of Employment, Job Creation and Job Destruction by Firm Size and Age—US Census Bureau Data, 1992-2005 (Average Annual Rates)**



Source: Haltiwanger, Jarmin, and Miranda, 2013: figure 1. Recreated with permission.

here they caution that “this relationship is quite sensitive to regression-to-the-mean effects” (p. 347). However, in a sense this finding is overturned because “once we add controls for firm age, we find no systematic inverse relationship between net growth rates and firm size” (p. 347, emphasis added). Haltiwanger, Jarmin, and Miranda (2013) argue that what’s really going on is that “firm births contribute substantially to both gross and net job creation,” and most new firms are relatively small. Therefore, analyses that do not take into account firm age will make it appear as if small firms generate most new jobs, when in fact it’s *young firms* that do so. Davidson (2008) also emphasizes that the field of entrepreneurship studies has drifted from focusing on small business *per se*, to concentrate instead on new economic activity, whatever the size of the firm.

Although these nuances are important for academics studying labour market dynamics, they do not affect our claim that entrepreneurship is critical to job growth. Indeed, the refinements in the quantitative litera-

ture actually *underscore* the conceptual approach laid out earlier in this chapter, in which entrepreneurship is associated *not* with owners or management *per se*, but rather with *innovation*.

Specifically, the results of Haltiwanger, Jarmin, and Miranda (2013) show just how much *new firms* contribute to net job creation.

As figure 1 indicates, it is not small firms *per se* that contribute (relative to their employment size) to net job growth, at least for US data in the period covered.<sup>6</sup> Rather, it is *young firms* that do so. Specifically, in both the small and large categories, we see that young firms have gross job creation shares that are higher than their total employment shares, whereas mature firms (both small and large) have gross job creation shares lower than total employment. The figure also indicates that small, mature firms have a much higher share of job destruction than job creation. All in all, we see that—at least for the US in the period covered in this chapter—net job growth is due more to a firm’s youth rather than smallness.

It is true that newly born firms can only have job creation, not job destruction, by definition. However, if all firms on average had equal job growth *rates*, regardless of firm age or size, then we would expect their share of gross job creation to equal their share of total employment. And yet, as figure 1 starkly reveals, the actual situation is nothing of the kind (at least for the US in the period studied). Rather, new start-ups (particularly those with 500 or fewer employees) are a source of dynamism. It then ap-

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6 Note in figure 1 that the bars indicate percentage shares of the total figures, *not* absolute job numbers. For example, just because a certain category might have a higher job destruction figure than job creation figure, we can’t conclude that the number of jobs shrank in that category, because the total numbers of jobs created in the economy typically will be higher than the total number of jobs destroyed. For example, from March 1994 to March 1995, the US private sector had 14.4 million jobs created with 11.1 million jobs destroyed, for a net growth of 3.3 million (see [https://www.bls.gov/web/cewbd/anntabl\\_1.txt](https://www.bls.gov/web/cewbd/anntabl_1.txt).) With these numbers, note that a firm age/size category responsible for, say, 35 percent of the job creation and 40 percent of the job destruction, would still create on net 5.04 million – 4.44 million = 600,000 jobs.

pears that most firms (weighted by aggregate employment) suffer a “trial by fire” period with a high “mortality rate” in their middle years, considering the young (1-10) firms in the small category, with their very high job destruction share (relative to total employment). Eventually, those firms that can grow large (i.e., 500 or more employees) and can survive at least a decade, stabilize into a pattern of high employment along with lower but nearly equal shares of gross job creation and destruction.

The pattern of job creation, as related to firm age and size, is broadly consistent with Baumol, Litan, and Schramm’s 2007 narrative, explained earlier in this essay, in which a vibrant economy relies on young, small firms to bring new ideas to the table, but then the older, large firms implement the innovations to serve the masses.

To be assured of robustness, there are studies that use different measures (besides firm size) and reach similar conclusions. For example, Wenekers and Thurik (1999) use business ownership rates as a proxy for “entrepreneurship.” Looking at a sample of 23 OECD countries from 1984 to 1994, they, too, find that entrepreneurship was associated with higher rates of employment growth at the national level. For another more recent example, Glaeser, Kerr, and Kerr (2015) note that both firm size and prevalence of start-ups have been associated with employment growth at the city level, but caution that there is an endogeneity problem. (In other words, there might be outside factors that are causing *both* entrepreneurship *and* employment growth to increase in some cities versus others.) Relying on a conjectured (negative) relationship between a region’s specialization in large-scale mining and the availability of human capital for other ventures, these authors use historical mining deposits as an instrument and “find a persistent link between entrepreneurship and city employment growth” (p. 498). That is to say, these authors attempt to control for exogenous factors, and still conclude that two measures of entrepreneurship—namely, small firm size and start-ups—are associated with faster city employment growth.

## **Unemployment**

Although it is obviously related to the issue of job creation, a slightly different question is the connection between entrepreneurship and unemployment. There are (at least) two theoretically plausible causal flows. On the one hand, we might expect that economies with higher levels of entrepreneurship would, other things being equal, have lower levels of unemployment, because the prevalence of entrepreneurs would lead to displaced workers more quickly finding a niche for their specific skill sets and work objectives. On the other hand, we might expect that economies with higher levels of unemployment would, other things being equal, have higher levels of self-employed workers, because these people can't find stable work as conventional employees.

Audretsch, Carree, van Stel, and Thurik (2005) seek to untangle these two conflicting effects. Their paper constructs a “two-equation vector autoregression model capable of reconciling these ambiguities and tests it for data of 23 OECD countries over the period 1974-2002” (p. 3). The authors conclude that both relationships to unemployment—what they dub the “entrepreneurial effect” and the “refugee effect,” respectively—can be found empirically. However, they “also find that the ‘entrepreneurial’ effects are considerably stronger than the ‘refugee’ effects” (p. 3).

Blanchflower (2000) analyzed 23 OECD countries from 1966 to 1996 and found a negative relationship between the self-employment rate and the unemployment rate. In his paper, Blanchflower summarized some of his own previous work in the following way: “In Blanchflower and Oswald (1990), we found a strong negative relationship between regional unemployment and self-employment for the period 1983–1989 in the UK using a pooled cross-section time-series data set. In Blanchflower and Oswald (1998), we confirmed this result, finding that the log of the county unemployment rate entered negatively in a cross-section self-employment probits for young people age 23 in 1981 and for the same people aged 33 in 1991” (Blanchflower, 2000: 477).

Audretsch and Thurik (2002) looked at a panel of 18 OECD countries over the period 1974 to 1998. Using self-employment as its proxy for “entrepreneurship,” they found that increased entrepreneurship is associated

with lower unemployment. (However, on its face this result might suffer from the feedback loop described earlier, in which unemployed people may have started their own businesses out of desperation, rather than entrepreneurial ambition.)

### ***Transition economies***

Another subfield in the entrepreneurship literature focuses on economies in transition. McMillan and Woodruff “summarize entrepreneurial patterns in the transition economies, particularly Russia, China, Poland and Vietnam” (2002: 154). They show that not only the communist planners, but also the Western observers, simply assumed that privatization of state-owned firms would be the driving force in the new economies, when in fact the “spontaneous” emergence of *new* firms was very significant. McMillan and Woodruff open their paper with this poignant quotation from Deng Xiaoping: “All sorts of small enterprises boomed in the countryside, as if a strange army appeared suddenly from nowhere,” and Deng admitted that this “was not something I had thought about. Nor had the other comrades. This surprised us” (Deng Xiaoping, quoted in McMillan and Woodruff, 2002: 153).

Estrin, Meyer, and Bytchkova (2006) document the rapid growth of the private sector (in both output and employment shares) in Eastern Europe after the fall of the Soviet Union. We reproduce some of their data in table 1.

As table 1 indicates, some of the transitions were incredibly speedy, particularly the Czech Republic and Lithuania, which saw at least a 50 percentage-point increase in their private share of GDP in just four years. They agree with the earlier McMillan and Woodruff (2002) perspective in thinking that the conventional analysis of transition economies downplayed the importance of entrepreneurship. Estrin, Meyer, and Bytchkova explain: “Privatization has received enormous attention in the literature... but new firm growth was probably at least as important; we observe that a significant proportion of private sector development preceded privatization in most transition economies” (2006: 694–695). They also argue that the “development of the entrepreneurial sector is sensitive to the institutional environment and there is a distinction between the more market-



**Table 1: Private Sector Share in GDP and Employment in Select Eastern European Countries, 1991-1995**

Country	Private Share of GDP		Private Share Employment	
	1991	1995	1991	1995
Albania	24%	60%	n/a	74%
Belarus	7%	15%	2%	7%
Bulgaria	17%	50%	10%	41%
Croatia	25%	40%	22%	48%
Czech Republic	17%	70%	19%	57%
Estonia	18%	65%	11%	n/a
Georgia	27%	30%	25%	n/a
Hungary	33%	60%	n/a	71%
Kazakhstan	12%	25%	5%	n/a
Lithuania	15%	65%	16%	n/a
Poland	45%	60%	51%	61%
Romania	24%	45%	34%	51%
Russia	10%	55%	5%	n/a
Slovenia	16%	50%	18%	48%
Ukraine	8%	45%	n/a	n/a

Adapted from Table 27.1 in Estrin, Meyer, and Bychkova (2006).

oriented economies of Central and Eastern Europe... and the slower and more erratic pace of change in the former Soviet Union” (2006: 694).

### **Individual case studies**

The prodigious literature on entrepreneurship contains “case studies” of individual countries or industries for particular time periods, touching on all of the aspects of the issue we have thus far described. (Indeed, Landes, Mokyr, and Baumol (2010) is a collection of essays devoted to the topic.)

For example, in 1980, Steinhoff studied the development of entrepreneurial abilities in Taiwan from 1880 to 1972. At the outset, he cautions the reader that “at least in some societies there are population strata whose

behavior is not exclusively determined by profit seeking” (Steinhoff, 1980: 2). Steinhoff lists Indian Brahmins (seeking mystical experiences), European aristocrats (preferring military service to industrial ventures), and the wealthy classes in China (pursuing government service rather than more lucrative commercial activities), as possible examples. In the rest of his study, Steinhoff documents the fascinating history of Taiwan, which was controlled by a sequence of more powerful states during this period, that includes its industrial development, as well as the growing prestige conferred on profit-earning. (The unusual element in Steinhoff’s account is the extent to which foreign threats constituted a series of “crises” that helped explain the speed with which Taiwanese society adapted.<sup>7</sup>) Although Steinhoff’s narrative thus connects the economic development of Taiwan to changing cultural attitudes and institutional rewards for commercial entrepreneurship, the study is a multidisciplinary approach and lacks quantitative measures of this specific relationship.

Yu (1998) agrees with earlier writers that Hong Kong’s economic “miracle” can only be explained with an emphasis on entrepreneurship, because standard growth models cannot explain its rapid industrialization and per capita income growth beginning in the 1950s. However, the Schumpeterian framework did not seem to fit very well in the case of Hong Kong. Instead, Yu invokes the work of “adaptive entrepreneurs” who imitated foreign firms and techniques, as Hong Kong shifted from fishing and agriculture into manufacturing, and then again into finance. Yu explicitly cites Kirzner (1973) as being a better paradigm to understand the entrepreneurship that transformed Hong Kong.

A different example comes from McCloskey (1973) and is the outgrowth of a doctoral dissertation that also epitomizes the promise and pitfalls of the themes we have addressed in this chapter. McCloskey’s task in this study is to acquit British entrepreneurs of the allegation—which had become “conventional wisdom” by the 1960s—that they underperformed their American and German peers in the iron and steel industry. Since this

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7 Per capita income in Taiwan fell by more than half during World War II (Steinhoff, 1980: 9).

was allegedly the *worst* example of British performance, McCloskey seeks to exonerate British entrepreneurs from the charge they were responsible for the empire's displacement as the world's leading economy. As laid out eloquently in works such as David Landes (1965), some of the specific accusations were that British entrepreneurs had failed to invest quickly enough in the emerging industries of "chemicals, automobiles, and electrical engineering," and that they "failed to adopt in many industries the best available techniques of production, such as ring spinning in cotton textiles, the Solvay process in chemicals, mechanical cutting in coal, and a host of new techniques in iron and steel" (McCloskey, 1973: 4). Landes put the matter quite vividly in this fashion:

Thus the Britain of the late nineteenth century basked complacently in the sunset of economic hegemony... [N]ow it was the turn of the third generation, the children of affluence, tired of the tedium of trade and flushed with the bucolic aspirations of the country gentleman... The weakness of British enterprise reflected this combination of amateurism and complacency... [T]he British manufacturer was notorious for his indifference to style, his conservatism [sic] in the face of new techniques, his reluctance to abandon the individuality of tradition for the conformity implicit in mass production. (Landes, 1965: 582, quoted in McCloskey, 1973: 3–4.)

The purpose of McCloskey's dissertation was to *overturn* this conventional wisdom, and acquit British entrepreneurs of responsibility for the relative decline of their nation's<sup>8</sup> economic standing in the world. McCloskey focused on the iron and steel industry, as this was the area where the alleged inferiority in entrepreneurial ability was the greatest. Then, rather than the casual and non-quantifiable notions of entrepreneurial ability in much of the literature, the author adopted precise measures of "productivity" tailored to these specific activities, and found little evidence of Ameri-

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8 Early in the book, McCloskey apologizes for using the shorter term "British" rather than the more accurate but cumbersome "citizens of the United Kingdom."

can superiority in the production of pig iron or rolled steel up until the eve of World War I (McCloskey, 1973: 114–120).

McCloskey attributes the (apparently) false narrative to a naïve reliance on statistics concerning national income and output in industries such as iron and steel, which undeniably showed that Britain after 1870 was growing more slowly than America or Germany. Yet McCloskey argues, “Whatever its political and psychological significance, however, there was nothing economically ominous for Britain in the faster growth of two large, industrializing nations” [i.e., the US and Germany] (p. 127). McCloskey then concludes:

It is unlikely that anyone should be blamed for Britain’s failure to match their [i.e. American and German] growth in any industry, least of all in an industry so dominated by internal supplies of resources and demands for investment goods as iron and steel. Late nineteenth-century entrepreneurs in iron and steel did not fail. By any cogent measure of performance, in fact, they did very well indeed. (McCloskey, 1973: 127)

The controversy over late nineteenth century British entrepreneurial performance—specifically in the iron and steel industries but also in the economy more generally—shows the importance of innovation to economic development. However, as McCloskey’s work underscores, we must be careful not to use “entrepreneurship” as a catch-all explanation when there are other factors at work, such as the growth of demand in industries characterized by reliance on particular natural resources.

### ***Regional development***

An entire subdiscipline is devoted to the study of entrepreneurship as it relates specifically to *regional* development.<sup>9</sup> For example, Suarez-Villa’s

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9 Note that the earlier section on growth in this chapter reviewed some of the academic work studying entrepreneurship and *regional* economic growth. Those particular studies will not be repeated in this section.

1989 book-length analysis of the historical development of sectors in an economy goes through various stages (agricultural, manufacturing, service-sector) and explains how those “macro” changes can be traced to “micro” incentives that are seized by entrepreneurs. As he summarizes: “Far from being the outcome of coincidental or seemingly random events, regional evolution has been shown to be the product of a deeper structure, where economic sectors, entrepreneurial action, and human wants become major forces in long-term change” (p. 180). Suarez-Villa’s perspective is important because too often analysts write as if local economies and populations “automatically” adapt to new stages in development, when in reality it takes individual farmers, for example, to incorporate the latest techniques that boost productivity, and it takes individual owners (or CEOs) to make the decision to “outsource” a factory because of labour costs and thus pave the way for a shift toward a more service-oriented domestic workforce. These changes are conditioned by market prices, but ultimately one or more decision makers, acting entrepreneurially, has to execute such change.

Rocha (2013) is another book-length treatment that summarizes existing research on “clusters” (i.e., concentration of economic activity) and tries to disentangle some of the subtle causal relationships. After a battery of statistical tests that are careful to avoid methodological pitfalls, Rocha finds that “clusters matter to both entrepreneurship and the relationship between entrepreneurship and development at the regional level,” but contrary to some earlier results, “industrial agglomerations do not” (Rocha, 2013: 27). Rocha argues that policy makers in particular need to understand that “clusters provide economies of specialization, labour supply, and specialized skills that help to overcome liabilities of newness, such as an unknown workforce, the learning of new roles, and other resources” (p. 27). Rocha thus echoes Baumol, Litan, and Schramm’s 2007 framework, in which “good capitalism” blends the virtues of innovative start-ups with the economies of scale offered by large, established firms.

## Policy implications

The purpose of the present chapter is to provide theoretical and empirical support for the important connection between entrepreneurship and prosperity. However, in order to place the chapter in context, some brief remarks on policy implications may be useful.

William Baumol's famous 1990 *Journal of Political Economy* paper distinguishes among productive, unproductive, and downright *destructive* entrepreneurship. In this approach, the ability of innovative and ambitious individuals to upset the existing order was not always a good thing. If such people figured out cheaper ways to deliver goods and services to voluntary customers, that was one thing. But if they engaged in cleverer rent-seeking, or outwitted their rivals in a war over drug turf, then these activities were wasteful or even harmful. Drawing on both theory and historical examples from several countries, Baumol argued that "policy can influence the allocation of entrepreneurship more effectively than it can influence its supply" (p. 893). In other words, policy makers shouldn't try to promote entrepreneurship *per se*, but instead should structure incentives so that *the given entrepreneurs* devote their skills to socially useful ends.

Although the arguments do not necessarily single out entrepreneurship *per se*, there is a wide literature explaining the connection between "economic freedom" and various measures of economic and social well-being, including GDP growth, job creation, literacy, reduced infant mortality, etc. (See McQuillan and Murphy, 2009; and Boudreaux, 2015, for a good overview.) In this vein, Sobel (2008) empirically tests Baumol's (1990) hypothesis, and concludes that institutional quality is critical for channeling ambitious individuals' energies into socially useful activities.

Bjørnskov and Foss (2008) look at 29 countries, analyzing the possible connection between various categories on the Economic Freedom of the World Index and measures of entrepreneurship, such as the Total Entrepreneurial Activity (TEA) rate (described earlier in this chapter). They conclude: "We find that the size of government is negatively correlated with entrepreneurial activity but that sound money is positively correlated with entrepreneurial activity" (p. 307).

Finally, in an effort to manage expectations, I note that some experts in this field believe that even institutional quality is not sufficient to encourage the “healthy” entrepreneurship discussed in this essay. In particular, McCloskey (2010) argues that it was not merely property rights, reasonable taxation, and the rule of law that explained the sudden emergence of capitalist innovation in the West. Another crucial component, McCloskey claims, was the transformation of cultural values and norms. To put the matter starkly: Even if the political authorities won’t seize your business, society’s most creative and ambitious individuals would be hesitant to found large companies if their family and friends considered merchants to be social pariahs. On this dimension, there is precious little policy makers can do, at least in the short to medium run.

## **Summary and conclusions**

This chapter has argued for a tight connection between entrepreneurship and economic prosperity. It began by drawing on the work of Joseph Schumpeter and Israel Kirzner to offer a conceptual framework for understanding the role entrepreneurs play in both grand innovation and the more mundane fine-tuning of the market economy’s sprawling operations. It then adopted the more recent framework of Baumol, Litan, and Schramm (2007) because these authors stress the need for both pioneering start-ups as well as the economies of scale and established distribution networks of mature, large firms.

Using this framework, the chapter surveyed the empirical literature, showing the vast evidence that entrepreneurship, measured in different ways, contributed to various indicators of economic prosperity, including GDP and productivity growth, job creation, and innovation. It also surveyed treatments of historical and regional analyses, showing once again the tremendous importance of entrepreneurship in delivering economic benefits to the masses.

Finally, it offered some thoughts on lessons for policy makers. Some of the leading thinkers in this field agree that government measures can’t

“create entrepreneurs” *per se*, but instead can provide the institutional prerequisites—which can be summarized as fiscal responsibility, sound money, and the rule of law—necessary for “good” entrepreneurship to flourish.



## References

Acs, Zoltan, and David B. Audretsch (1990). *Innovation and Small Firms*. MIT Press.

Acs, Zoltan, and David B. Audretsch (1992). Chapter 3: The Social and Economic Impact of Entrepreneurship. In Donald L. Sexton and John D. Kasarda (eds.), *The State of the Art of Entrepreneurship* (PWS-Kent Publishing Company).

Armentano, Dominick T. (1972). *The Myths of Antitrust: Economic Theory and Legal Cases*. Arlington House.

Audretsch, David B., M.A. Carree, A.J. van Stel, and A.R. Thurik (2005). Does Self-Employment Reduce Unemployment? *Papers on Entrepreneurship, Growth and Public Policy*, Number 07/2005. Max Planck Institute of Economics.

Audretsch, David B., and M. Fritsch (1996). Creative Destruction: Turbulence and Economic Growth. *Behavioral Norms, Technological Progress, and Economic Dynamics: Studies of Schumpeterian Economics*. University of Michigan Press.

Audretsch, David B., and M. Fritsch (2002). Growth Regimes over Time and Space. *Regional Studies* 36: 113–124.

Audretsch, David B., and Max Keilbach (2004). Entrepreneurship Capital and Economic Performance. *Regional Studies* 38, 8 (November): 949–959.

Audretsch, David B., and Max Keilbach (2006). Chapter 11: Entrepreneurship, Growth, and Restructuring. In Mark Casson, Bernard Yeung, Anuradha Basu, and Nigel Wadeson (eds.), *The Oxford Handbook of Entrepreneurship* (Oxford University Press): 281–310.

- Audretsch, David B., and R. Thurik (2002). *Linking Entrepreneurship to Growth*. STI Working Paper 2081/2. OECD.
- Baumol, William J. (1990). Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy* 98, 5: 893–921.
- Baumol, William J. (2002). *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*. Princeton University Press.
- Baumol, William J., Robert E. Litan, and Carl J. Schramm (2007). *Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity*. Yale University Press.
- Birch, David L. (1979). *The Job Generation Process*. Unpublished report prepared by the MIT Program on Neighborhood and Regional Change for the Economic Development Administration, US Department of Commerce.
- Bjørnskov, Christian, and Nicolai Foss (2008). Economic Freedom and Entrepreneurial Activity: Some Cross-Country Evidence. *Public Choice* 134, 3: 307–28.
- Blanchflower, David B., and A.J. Oswald (1990). Self-Employment and the Enterprise Culture. In R. Jowell and S. Witherspoon (eds.), *British Social Attitudes: The 1990 Report* (Gower Press).
- Blanchflower, David B., and A.J. Oswald (1998). What Makes an Entrepreneur? *Journal of Labour Economics* 16, 1 (January): 26–60.
- Blanchflower, David B. (2000). Self-Employment in OECD Countries. *Labour Economics* 7: 471–505.
- Boudreaux, Donald (1994). Schumpeter and Kirzner on Competition and Equilibrium. In Peter J. Boettke and Dave Prychitko (eds.), *The Market*

*Process: Essays in Contemporary Austrian Economics*, vol. 1 (Edward Elgar): 52–61.

Boudreaux, Donald (ed.) (2015). *What America's Decline in Economic Freedom Means for Entrepreneurship and Prosperity*. Fraser Institute. Available at: <<https://www.fraserinstitute.org/sites/default/files/what-americas-decline-in-economic-freedom-means-for-entrepreneurship-and-prosperity.pdf>>, as of March 7, 2018.

Brunner, H.-P. (1991). The Development Experience and Government Politics in Southeast Asia with Respect to Small Firms: Lessons for Eastern Europe. In Z.J. Acs and D.B. Audretsch (eds.), *Small Firms and Entrepreneurship: A Global Perspective* (Cambridge University Press).

Callejón, M., and A. Segarra (1999). Business Dynamics and Efficiency in Industries and Regions: The Case of Spain. *Small Business Economics* 13: 253–271.

Cantillon, Richard (1755/2010). *An Essay on Economic Theory: An English Translation of Richard Cantillon's Essai sur la Nature du Commerce en Général*. Chantal Saucier (tr.) (Mises Institute). <<https://mises.org/library/essay-economic-theory-0>>, as of March 18, 2018.

Carree, Martin, Andre van Stel, Roy Thurik, and Sander Wennekers (2002). Economic Development and Business Ownership: An Analysis Using Data of 23 OECD Countries in the Period 1976-1996. *Small Business Economics* 19, 3 (November): 271–290.

Carree, Martin, and Roy Thurik (eds.) (2006). *Entrepreneurship and Economic Growth*. Edward Elgar.

Davidsson, Per (2008). Chapter 2: Looking back at 20 Years of Entrepreneurship Research: What Did We Learn? In Hans Landström, Hans Crijns, Eddy Laveren, and David Smallbone (eds.), *Entrepreneurship*,

*Sustainable Growth and Performance: Frontiers in European Entrepreneurship Research* (Edward Elgar).

Davis, Steven J., John Haltiwanger, and Scott Schuh (1996). *Job Creation and Destruction*. MIT Press.

Decker, Ryan, John Haltiwanger, Ron Jarmin, and Javier Miranda (2014). The Role of Entrepreneurship in US Job Creation and Economic Dynamism. *The Journal of Economic Perspectives* 28, 3: 3–24.

Drucker, Peter F. (1985). *Innovation and Entrepreneurship: Practice and Principles*. Harper & Row.

Estrin, Saul, Klaus E. Meyer, and Maria Bytchkova (2006). Chapter 27: Entrepreneurship in Transition Economies. In Mark Casson, Bernard Yeung, Anuradha Basu, and Nigel Wadeson (eds.), *The Oxford Handbook of Entrepreneurship* (Oxford University Press): 693–725.

Folsom, Burton (2003). *The Myth of the Robber Barons* (4<sup>th</sup> ed.). Young America's Foundation.

Gasse, Yvon (1990). Chapter 6: An Experience in Training in the Area of Entrepreneurship and Starting a Business in Quebec: The Project “Become an Entrepreneur.” In Rik Donckels and Asko Miettinen (eds.), *New Findings and Perspectives in Entrepreneurship* (Avebury).

Glaeser, Edward L., Sari Pekkala Kerr, and William R. Kerr (2015). Entrepreneurship and Urban Growth: An Empirical Assessment with Historical Mines. *Review of Economics and Statistics* 97, 2: 498–520.

Gort, Michael, and Nakil Sung (1999). Competition and Productivity Growth: The Case of the U.S. Telephone Industry. *Economic Inquiry* 37, 4 (October): 678–691.

Haltiwanger, John, Ron S. Jarmin, and Javier Miranda (2013). Who Creates Jobs? Small vs. Large vs. Young. *Review of Economics and Statistics* 95, 2 (May): 347–361.

Hayek, Friedrich A. (1937). Economics and Knowledge. *Economica* 4 (February): 33–54.

Hayek, Friedrich A. (1948). *Individualism and Economic Order*. The University of Chicago Press.

Holtz-Eakin, D., and C. Kao (2003). *Entrepreneurship and Economic Growth: The Proof is in the Productivity*. Center for Policy Research, Syracuse University.

Kirzner, Israel M. (1973). *Competition and Entrepreneurship*. University of Chicago Press.

Landes, David S. (1965). Chapter V: Technological Change and Development in Western Europe, 1750-1914. In H.J. Habakkuk and M. Postan (eds.), *The Cambridge Economic History of Europe. Vol. VI: The Industrial Revolution and After: Incomes, Population, and Technological Change* (pt. I) (Cambridge University Press).

Landes, David S., Joel Mokyr, and William J. Baumol (2010). *The Invention of Enterprise: From Ancient Mesopotamia to Modern Times*. Princeton University Press.

McCloskey, Donald N. (1973). *Economic Maturity and Entrepreneurial Decline: British Iron and Steel, 1870-1913*. Harvard Economic Studies (Vol. 142). Harvard University Press.

McCloskey, Deirdre N. (2010). *Bourgeois Dignity: Why Economics Can't Explain the Modern World*. The University of Chicago Press.

McMillan, John, and Christopher Woodruff (2002). The Central Role of Entrepreneurs in Transition Economies. *Journal of Economic Perspectives* 16, 3 (Summer): 153–170.

McQuillan, Lawrence J., and Robert P. Murphy (2009). *The Sizzle of Economic Freedom: How Economic Freedom Helps You and Why You Should Demand More*. Pacific Research Institute.

Michelacci, Claudio (2003). Low Returns in R&D Due to the Lack of Entrepreneurial Skill. *The Economic Journal* 113 (January): 207–225.

Mises, Ludwig von (1952). Chapter IX: Profit and Loss. In *Planning for Freedom*. Libertarian Press. <<https://mises.org/library/planning-freedom-and-twelve-other-essays-and-addresses>>, as of March 18, 2018.

Neumark, David, Brandon Wall, and Junfu 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.

Palagashvili, Liya (2015). Chapter 1: Entrepreneurship, Institutions, and Economic Prosperity. In Donald Boudreaux (ed.), *What America's Decline in Economic Freedom Means for Entrepreneurship and Prosperity* (Fraser Institute): 3–35. <<https://www.fraserinstitute.org/sites/default/files/what-americas-decline-in-economic-freedom-means-for-entrepreneurship-and-prosperity.pdf>>, as of March 7, 2018.

Prusa, Thomas J., and James A. Schmitz, Jr. (1991). Are New Firms an Important Source of Innovation? Evidence from the PC Software Industry. *Economics Letters* 35: 339–342.

Rocha, Héctor O. (2013). *Entrepreneurship and Regional Development: The Role of Clusters*. Palgrave Macmillan.

Schmitz, James A., Jr. (1989). Imitation, Entrepreneurship, and Long-Run Growth. *Journal of Political Economy* 97, 3: 721–739.

Schumpeter, Joseph A. (1942/1994). *Capitalism, Socialism, and Democracy*. Routledge.

Schumpeter, Joseph A. (1947/2008). The Creative Response in Economic History. *Journal of Economic History*. Reprinted in Richard V. Clemence (ed.), *Essays on Entrepreneurs, Innovations, Business Cycles, and the Evolution of Capitalism* (Transaction Publishers): 221–231.

Schumpeter, Joseph A. (1949/2008). Economic Theory and Entrepreneurial History. *Change and the Entrepreneur*. Reprinted in Richard V. Clemence (ed.), *Essays on Entrepreneurs, Innovations, Business Cycles, and the Evolution of Capitalism* (Transaction Publishers): 253–271.

Schweikart, Larry, and Lynne Pierson Doti (2010). *American Entrepreneur: The Fascinating Stories of the People Who Defined Business in the United States*. AMACOM.

Sobel, Russell S. (2008). Testing Baumol: Institutional Quality and the Productivity of Entrepreneurship. *Journal of Business Venturing* 23, 6: 641–55.

Steinhoff, Manfred (1980). *Prestige and Profit: The Development of Entrepreneurial Abilities in Taiwan, 1880-1972*. Monograph no. 20. Development Studies Centre, Australian National University.

Stel, André van (2006). *Empirical Analysis of Entrepreneurship and Economic Growth*. Springer.

Suarez-Villa, Luis (1989). *The Evolution of Regional Economies: Entrepreneurship and Macroeconomic Change*. Praeger.

Wennekers, S., and R. Thurik (1999). Linking Entrepreneurship and Economic Growth. *Small Business Economics* 13, 1: 27–55.

Yu, Tony Fu-Lai (1998). Adaptive Entrepreneurship and the Economic Development of Hong Kong. *World Development* 26, 5: 897–911.