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ECONOMIC INSTRUCTION

A Simple Model of Entrepreneurship for Principles of Economics Courses

Frank R. Gunter

The critical roles of entrepreneurs in creating, operating, and destroying markets, as well as their importance in driving long-term economic growth are still generally either absent from principles of economics texts or relegated to later chapters. The primary difficulties in explaining entrepreneurship at the principles level are the lack of a universally accepted definition, a plausible explanation of the demand for entrepreneurship, and a diagram that summarizes the impact of entrepreneurship on market equilibrium and growth—a definition, a story, and a picture. This article discusses how the notion of the stationary state associated with Schumpeter (1911/1983), Knight (1921/1971), and Weber (1930/2002) can provide a framework for integrating the entrepreneur into the early part of principles of economics courses.

Keywords *entrepreneurship, Kirzner, principles of economics, Schumpeter, stationary state*

JEL codes *A22, D01, O30*

"The theoretical firm is entrepreneur-less—the Prince of Demark has been expunged from the discussion of Hamlet." W. J. Baumol 1968, 66

As Phipps, Strom, and Baumol note in their 2012 *Journal of Economic Education* article, "... introductory economics textbooks continue, for the most part, to lack comprehensive coverage of entrepreneurship and related topics" (60). Even among those texts that discuss entrepreneurship, the amount, depth, and coverage vary greatly. Some attempt to treat entrepreneurship as just another input along with labor, capital, and natural resources. Others state that entrepreneurship

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is entirely exogenous. These approaches distort the essential role of entrepreneurship in the creation, operation, and expansion of a market economy, as well as its critical impact on long-term economic growth.

This divergence in treatment has several causes. First, there is an intense ongoing debate on the exact nature of entrepreneurial activity, and therefore, definitions vary substantially. Second, it is difficult to distinguish the demand for entrepreneurship from its supply. Entrepreneurial acts tend to be heterogeneous, and the discovery process is nonlinear or even random. If an entrepreneur is the only one who sees the need for his economic contribution, does demand exist for an entrepreneurial act prior to the entrepreneur's insight? Finally, the characteristics of entrepreneurship defy analysis using principles-level Marshallian demand and supply curves. The stationary state framework provides an effective means of clarifying the entrepreneur's role in creating markets and bringing these markets to equilibrium.

WHAT IS ENTREPRENEURSHIP?

All markets were created by, often operated by, and sometimes destroyed by entrepreneurs. They are the major drivers of economic activity. Without entrepreneurs, not only would it be difficult for an economy to operate efficiently—approach its production possibility frontier (PPF), but also economic growth (outward shifts of the PPF) would slow or cease entirely.

Researchers in sociology, industrial organization, management, and microeconomics not only approach the study of entrepreneurs from different perspectives, but each also tends to focus on the one (or few) entrepreneurial characteristic(s) that are most relevant to the researcher's interest. However, it is important at the principles level to provide an inclusive definition of entrepreneurs that will establish a foundation for more sophisticated analysis. Over the last decade of teaching principles of economics, I have developed the following definition.

Entrepreneurs are individuals who, in an uncertain environment, recognize opportunities that most fail to see, and create ventures to profit by exploiting these opportunities.

Entrepreneurs are Individuals . . .

While many large corporations strive to create environments that encourage entrepreneurship within their organizations (often called intrapreneurship), failure is common. Baumol (2010) argued that these failures result from attempting to flout comparative advantage. His analysis points to a more efficient David-Goliath division of labor between individual entrepreneurs who engage in innovation and large oligopolistic firms that buy out the entrepreneur in order to move the innovation to a mass market. This dichotomy is discussed at greater length in the section on economic growth below.

. . . Who, in an Uncertain Environment . . .

One of the oldest and most widely accepted characteristics of entrepreneurs is that they specialize in business-related judgmental decisions where there is no obviously correct answer *and* information is costly (Cantillon 1755/2001; Casson et al. 2006). In other words, because the environment is uncertain, entrepreneurs make business decisions based on insight. The uncertainty

that entrepreneurs must wrestle with is different from risk. Successfully bringing a completely new product to market and filling an inside straight in poker are both very difficult. However, while the former involves true Knightian uncertainty, the latter is simply a matter of risk (Knight 1921/1971). It has been argued that uncertainty is the first cause of economics. If uncertainty did not exist, societies could deal with scarcity by solving a series of simultaneous equations describing resources, technology, and consumer preferences—neither entrepreneurs nor economists would not be necessary (Hayek 1945).

. . . Recognize Opportunities that Most Fail to See . . .

This means that entrepreneurs tend to possess the quality of "alertness"; they are prepared, curious, and attentive (Kirzner 1985, 7). The recognition of such an opportunity is a genuine creative act that often baffles researchers, and sometimes the entrepreneurs themselves. The reasoning that leads an entrepreneur to an innovation is often nonlinear or intuitive. For example, many entrepreneurs claim that after spending months or years in unsuccessful attempts, they realize in a flash of insight that there was always a simpler way of achieving their goals. Another commonly reported occurrence involves obtaining an insight by drawing analogies among very different phenomena.

. . . and Create Ventures to Profit by Exploiting these Opportunities.

The entrepreneur faces a challenge when he or she seeks to profit from judgmental decision or insight. Usually, the entrepreneur's ability to immediately sell an insight is severely limited because the insight is either too simple or it is too complex. If too simple, it is unlikely that intellectual property laws can protect it. The detailed description or demonstration of the insight to a prospective purchaser will allow its theft. At the other extreme, since many innovations are based on nonlinear thinking or intuition, it is difficult to convince another that the insight will eventually lead to a substantial return on investment. Thus, the most practical way that most entrepreneurs can profit from their insights or judgmental decisions is to establish a firm.

But if one accepts this definition of entrepreneur, then how do entrepreneurs shape the market economy? One way of answering this question is by imagining an economy that does not need entrepreneurs—a stationary state.

STATIONARY STATE

Visualize an economy that merely reproduces itself at constant rates. There is a given population, not changing in either numbers or age distribution. The tasks and wants of households are given, and do not change. The ways of production and commerce are optimal from the standpoint of the firm's interest, and with respect to existing horizons and possibilities. And because they are optimal, they do not change. In other words, year after year, the same products are produced in the same way, sold in the same way, and consumed in the same way. All markets are in equilibrium with the amount demanded equal to the amount supplied at current prices. In such a Schumpeter-Knight-Weber stationary state, there is nothing that requires an entrepreneur. All that is required are managers (see Schumpeter [1911/1983], Knight [1921/1971], and Weber [1930/2002]).

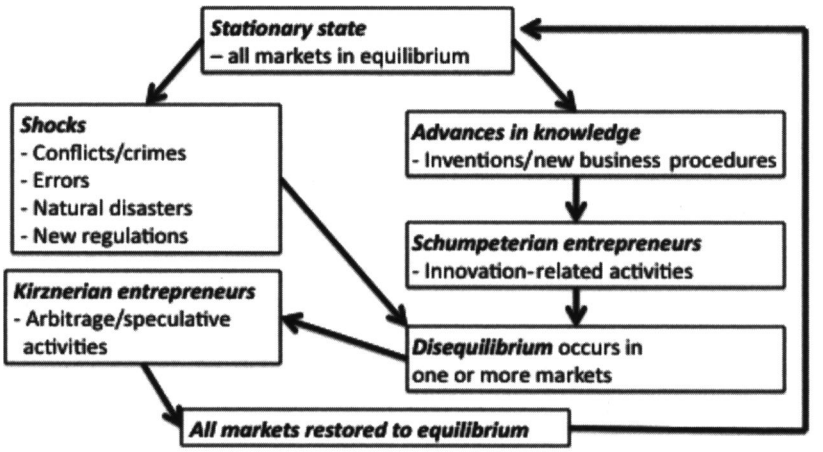

FIGURE 1 Stationary state and entrepreneurship.

But stationary states are subject to exogenous forces—shocks or advances in knowledge—that disrupt their smooth predictable patterns by creating disequilibria in one or more markets. And if a society provides the proper institutions and profit incentives, then two types of entrepreneurs will respond to these outside forces. Their entrepreneurial acts will eventually result in a restoration of market equilibria and/or accelerate economic growth. These relationships are illustrated in figure 1.

Natural or Manmade Shocks

Outside forces can take the form of a variety of natural or manmade shocks to the stationary state economy. These shocks disrupt markets leading to—at pre-shock prices—an excess amount demanded of one or more goods or services *and* an excess amount supplied of other goods or services. For example, human error may wreck a railroad line that carries corn to an urban market, leading to an excess supply of corn in the countryside, and a shortage in the urban market. This disruption of equilibrium in multiple markets implies inefficient use of labor, capital, or natural resources; the economy has been pushed inside its PPF.

This disruption also provides opportunities for profitable arbitrage or speculation by (Kirznerian) entrepreneurs (Kirzner 1979, chap. 7). In both arbitrage and speculation, the entrepreneur attempts to buy a good or service at a low price and sell it at a high price. Such activities tend, of course, to raise prices where Kirznerian entrepreneurs are net buyers, and lower prices where they are net sellers. Therefore, arbitrage and speculation tend to restore market equilibrium, and in the process, eliminate the opportunity for further profit. The economy returns to its stationary state on the PPF until the next shock arrives.

Advances in Knowledge

But shocks are not the only events that disturb the stationary state and create profit-making opportunities for entrepreneurs. Advances in human knowledge—whether in the form of inventions,

new business procedures, or changes in consumer values—have the potential of shifting out an economy's PPF. In fact, it has been estimated that over 80 percent of long-term economic growth occurs as a result of advances in human knowledge.

Advances in knowledge generate profit opportunities for individuals who are able to make use of these advances to create new products, processes, or markets (Schumpeter 1911/1983). Unlike the Kirznerian entrepreneurs discussed above who arbitrage or speculate among existing products, processes, or markets, innovative (or Schumpeterian) entrepreneurs tend to destroy existing products, processes, or markets in the process of replacing them with new ones (a process referred to as creative destruction). Therefore Schumpeterian entrepreneurs are responsible for most technological change. The Schumpeterian entrepreneur does not create a new product, process, or market in order to sell a product that the ultimate consumer wants. Rather, he or she attempts to create a new product, process, or market in order to sell a product that the ultimate consumer *will* want. Most engage not in invention but rather in innovation.[1]

Interaction of Schumpeterian and Kirznerian Entrepreneurs

In its simplest form, the demand for Schumpeterian entrepreneurship is a function of advances in human knowledge. During periods of rapid advances in knowledge, the rewards for creative destruction are greater. This motivates these entrepreneurs to disturb existing equilibria. On the other hand, the demand for Kirznerian entrepreneurship is a function of actual changes in existing markets. These actual changes create disequilibrium situations that provide profit opportunities that Kirznerian entrepreneurs can exploit, and in the process, restore equilibria.

The simultaneous efforts by the two types of entrepreneurs will not only lead to substantial changes in the structure of the economy, but also encourage long-term economic growth. With respect to structure, entrepreneurial activities help explain both the origin of small businesses and the important roles of such businesses in creating new products, employment, and economic growth.

THE BIG ROLE OF SMALL BUSINESS

Small firms have been responsible for a great increase in the variety of markets, processes, and products. Among the many twentieth century innovations created by small firm entrepreneurs are such widely used items as artificial skin, hydraulic brakes, rotary oil-drilling bits, and the zipper.

In addition, it is increasingly understood that small firms tend to be the most rapid job creators. However, as Haltiwanger, Jarmin, and Miranda (2010, 45) have pointed out, rapid job creation is more of a function of the age of small firms than their size. For example, in 2005, there were roughly 2.5 million net new jobs created. However, new firms (startups) created about 3.5 million net new jobs in that year, while older firms experienced net declines in employment.

This result is consistent with the uncertainty facing entrepreneurs who establish new firms in order to bring innovations to market. Their firms tend to rapidly move either up or out, either rapidly expand if their innovation is economically successful or rapidly go out of business if their innovation fails. But whether they succeed or fail, researchers have increasingly recognized the important impact of small entrepreneurial businesses on economic growth.

ENTREPRENEURSHIP AND ECONOMIC GROWTH

The stationary state model of an economy can be made more realistic by positing that adverse and favorable shocks alternate in a cycle. While there are good times and bad, little changes over the long run. This crude cyclic form of the stationary state generally describes the lives of almost all of humanity from roughly 1–1500 AD. Maddison (2007, 382, Table A.7) estimates that the average world per capita income was barely above subsistence during this period.

In fact, it was only with the spread of the Industrial Revolution that a substantial proportion of the world's population finally escaped from a Malthusian hand-to-mouth existence. Until the Industrial Revolution, every generation lived the same lives as their ancestors within a cycle of good times and bad. If time travel transported a first century AD rice farmer from southern China or a sailor from a Roman ship in the Mediterranean, and dropped them off 1,500 years later in the same areas, the farmer and sailor would discover that their professions and quality of life had changed little.

In economic terms, this cyclical stationary state reflects the efforts of generations of Kirznerian entrepreneurs continually striving through arbitrage or speculation to restore market equilibria after every shock. However, the failure of the world's economies to achieve any substantial long-term improvement in living standards for more than a millennium points to a shortage of Schumpeterian (innovative) entrepreneurship. Of course, the appearance of innovative entrepreneurship was not the sole cause of the sharp rise in living standards experienced during the Industrial Revolution; expanding markets accompanied by greater specialization also had a major impact. However, even after world living standards began their dramatic increase with the Industrial Revolution, progress was very uneven across countries. Some countries like the United States were able to achieve per capita incomes of $47,300 a year, while 800 million people in the world still live in countries with per capita incomes of less than $1,000 a year (The World Bank 2012, Table 1.1).

Schumpeterian Entrepreneurship (Creative Destruction) is the Principal Cause of Economic Growth and Development

The recognition of the critical role of entrepreneurship in bringing about economic growth is relatively recent. In neo-classical economics, technological change was exogenous—manna from heaven. However, when economic researchers estimated the impact of technological change on economic growth, there was a large unexplained disparity among nations. Why should advances in technology affect some countries but not others? Romer (1990) argued that the rate of technological change in an economy was determined by the stock of knowledge, and the accumulation of knowledge was endogenous (it could be increased by appropriate policies).

Policies intended to accelerate the rate of knowledge accumulation have to account for the fact that knowledge is generally nonrival and only partially excludable (it is neither a conventional private nor public good; Arrow 1962a; Romer 1990). Thus, there is a free-rider problem, and production of knowledge by firms in competitive markets will be suboptimal. A firm creating knowledge would bear the cost, but some or all of the benefit would "spill over" to its competitors. While some knowledge accumulation occurs as a by-product of production (learning by doing), societies also rely upon large-firm (oligopolistic or monopolistic) research and development

(R&D), university research, or government-supported laboratories to create the needed knowledge (Arrow 1962b). Therefore, in order to accelerate a nation's economic growth, governments should attempt to increase the amount of human capital devoted to research in large-firm R&D and university or government research programs. There was no role in this theory for small businesses, entrepreneurs, or uncertainty (Romer 1990, S82).

However, empirical tests of this basic knowledge-growth model generally failed. Some countries with large investment rates in R&D, such as Sweden and Japan, experienced slow economic growth, while other countries with lower rates of knowledge creation grew rapidly. The combination of high rates of knowledge accumulation and sluggish economic growth is often referred to as the European Paradox. These observations were confirmed by tests of the effect on GDP growth rates of an increase in the percentage of GDP spent on R&D. These tests generally found no statistically significant results (for example, see Braunerhjelm et al. 2010, 106).

Entrepreneurship is the missing link between knowledge accumulation and economic growth. Innovations are by their very nature uncertain. As a result, different individuals can have different estimates of the value of an innovation. That it is difficult to accurately predict the ultimate economic value of inventions is illustrated by the relatively few inventions that actually earn a significant return. In a study of U.S. university research, Carlsson and Fridh (2002) found that only 1 percent to 2 percent of all inventions that resulted from some very expensive university research eventually resulted in a significant economic return.

Knowledge creators, whether corporate R&D entities, governments, universities, or small "garage" inventors, will of course only pursue those innovations whose expected return on investment (ROI) exceeds a certain target percentage. For example, as a matter of corporate strategy, a firm may decide to only pursue those projects that have an expected ROI that exceeds 20 percent. As a result, an economy can fail to receive the full advantage of beneficial advances in knowledge for two reasons. First, because of the uncertainty involved, knowledge creators may mistakenly underestimate the potential ROI of an innovation. Second, there might be other entities that would be willing to accept a lower ROI target when deciding whether to pursue an innovation.

While some entrepreneurs may be creators of economic knowledge, most play a more important role in reducing the amount of "abandoned" knowledge. Knowledge obtained through research is at least partially nonexcludable, and therefore can spill over through professional publications, departures of key employees, and news stories, as well as casual conversations over coffee with friends. As a result of these spillovers, entrepreneurs become aware of knowledge advances, and based on their differing assessments of the economic value of these advances, they may pursue innovations that were rejected (abandoned) by the original knowledge creators.[2]

In its simplest version, the spillover effect might be seen as a sequential process. Corporate R&D, university or government research programs produce advances in knowledge. Since the profitability of these advances is uncertain, there will be a diversity of opinions about whether the knowledge advance can be converted into an economically successful innovation. Corporations and other entities will pursue those innovations that they think will exceed their target ROI, and abandon the rest. However, due to the knowledge spillover effect, other firms or individuals will become aware of the abandoned knowledge. And if other firms or individuals believe that the return on innovations based on this abandoned knowledge will exceed their (possibly lower) target ROI, then they will pursue them. The result is less waste of true advances in knowledge, and a more rapid rate of economic growth.

Beyond anecdotes, there is an increasing amount of empirical work that emphasizes the important role for entrepreneurs in facilitating economic growth. For example, Braunerhjelm et al. (2010, 117) showed that, irrespective of econometric specification, a proxy for entrepreneurship was a strongly significant determinant of real GDP growth in 17 OECD countries over a 20-year period.

Therefore, in order to maximize the rate of economic growth, an economy needs both knowledge creators and Schumpeterian entrepreneurs. Why do some countries possess a large number of Schumpeterian entrepreneurs and progress rapidly while others are stagnant? Extrapolating from personal preferences and circumstances, the most common explanations are culture and institutions.

IMPACT OF CULTURE AND INSTITUTIONS ON ENTREPRENEURSHIP

The impact of culture on entrepreneurship is extremely controversial. Some researchers have argued that particular cultures are hostile to entrepreneurship, while others have argued that such arguments reflect a biased or mistaken perception of the cultures in question. However, societies with vibrant Schumpeterian entrepreneurship tend to have several characteristics in common: The general population thinks more in terms of the individual rather than the community; there is less respect for authority and age; persons tend to think that success should be rewarded by profit or other financial gains rather than promotion to higher status positions; and finally, it is accepted that rewards from successful entrepreneurship should accrue to the individual entrepreneur and not to his extended family, tribe, or to the state (see Weber 1930/2002; Landis, Mokyr, and Baumol 2010). But even if the cultural environment is important in determining the scope of innovative entrepreneurship, it is uncertain whether culture—especially when grounded in religious beliefs—can be changed in order to provide a more entrepreneur-friendly society. Attempts to move beyond culture to focus on institutions raise the question: To what extent do institutions reflect cultural values?

The existence of a vibrant entrepreneur community is also dependent on the specific incentives embedded in a country's formal or informal institutions. A growing literature on a myriad of policy initiatives intended to encourage entrepreneurship has identified some critical institutional needs.[3] These include the development of legal, regulatory, and tax systems that deal with the three most serious challenges facing small-scale entrepreneurs: incomplete contracts, rent-seeking, and a hostile regulatory environment.

Incomplete Contracts

Because of the inescapable uncertainty associated with entrepreneurship, contracts involving entrepreneurs tend to be incomplete in the sense that it is impossible to negotiate in advance every possible contingency. There are just too many unknowns in agreements involving intellectual property rights (Arrow 1962a). Therefore, the parties involved will rely upon formal or informal institutions to resolve any future disputes between the entrepreneur and other contracting parties. Ideally, a country's institutions should favor timely, effective, predictable, fair, and low-cost resolution of contract disputes. If any of these characteristics is missing, then it will tend to discourage entrepreneurship.

Rent-Seeking

In their search of profits, entrepreneurs generally play an important positive role in restoring markets to equilibrium and accelerating technological change. However, it is possible that some entrepreneurs may seek to profit in ways that prevent market equilibrium or restrain economic growth. For example, rather than attempt to beat the competition by investing in the development of a better product, an entrepreneur may instead "invest" in lobbying elected officials into outlawing the competitor's product. Rather than leading to an acceleration of economic growth, such unproductive entrepreneurship may actually lead to destruction of economic value (Baumol 1990; Desai, Acs, and Weitzel 2010). Therefore, perverse incentives can reduce productive entrepreneurship in two ways: by encouraging creative persons to engage in unproductive rather than productive entrepreneurship; and by increasing costs, unproductive entrepreneurs tend to reduce the profitability of other entrepreneurs. One common result of an excess of unproductive entrepreneurship is the creation of a hostile regulatory environment.

Hostile Regulatory Environment

An extensive web of business regulations often has a disproportionate adverse impact on small innovative firms. These regulations may have desirable public purpose such as protecting the environment, or they may result from some form of rent-seeking, such as lobbying. Regardless of the motivation, complex regulations make it more difficult to operate a small business, especially an entrepreneurial small business.

Developing good policies to deal with incomplete contracts and ensure that the regulatory environment is favorable for entrepreneurship is necessary but insufficient. It is also necessary to turn those policies into institutions, and this runs into a fundamental problem. Institutions are not generally created to maximize the welfare of a society as a whole, but rather institutions are usually formed so as to maximize the welfare of those who have the political power to devise new institutions (North 1990). With respect to entrepreneurship, this is often seen as a conflict between small firms that favor a more dynamic economy but lack political influence, and big business (and big labor) that oppose change that they cannot control and generally, have more political influence. This is an example of a principal-agent problem where the interests of the principals (the public that benefits from more rapid economic development) and their agents (elected officials) diverge. Fortunately, if surveys, newspaper, and online opinion pieces are any guide, there is increasing recognition among the voting public of the value of entrepreneurial small firms in introducing new products, creating employment, and facilitating economic growth. Hopefully, this means that voters will increasingly evaluate elected officials on their ability to develop entrepreneur-friendly institutions.

CONCLUSION

Is entrepreneurship important enough to principles of economics to either take the place of another topic or expand already encyclopedia-length texts? Yes. The role of the entrepreneur is critical not only to understand the creation, operation, and destruction of markets but also because of its important role in long-term economic growth. As a result, it is time for a serious treatment

of entrepreneurship in the early (foundation) chapters of principles of economics texts. A clear definition, the notion of the stationary state, and the accompanying diagram provide a framework for introducing the key aspects of entrepreneurship at the principles level. This can facilitate classroom discussions on both the implications of having a mix of small and large firms in the same industry, and the role of public policy in furthering economic development.

NOTES

1. Inventions and innovations are closely related but distinct. Following Schumpeter (1911/ 1983), first, there is an idea; second, an invention that is an idea made manifest; and finally, an innovation that is an invention actually used to create value. Of course, an invention or other advance in knowledge may wait a long time, possibly hundreds or thousands of years, before an entrepreneur actually uses the invention for a successful innovation.
2. See Audretsch, Keilbach, and Lehmann (2006), chap. 3, for a detailed discussion of the spillover theory of entrepreneurship.
3. See, for example, Parker (2009), chaps. 15, 16, and 17; and Baumol, Litan, and Schramm (2007), chap. 8.

REFERENCES

Arrow, K. 1962a. Economic welfare and the allocation of resources for invention. In *Rate and direction of inventive activity*, ed. Rand Corporation, 609–26. Santa Monica, CA: Rand Corporation.

———. 1962b. The economic implications of learning by doing. *Review of Economics and Statistics* 80: 155–73.

Audretsch, D. B., M. C. Keilbach, and E. E. Lehmann. 2006. *Entrepreneurship and economic growth.* New York: Oxford University Press.

Baumol, W. J. 1968. Entrepreneurship in economic theory. *American Economic Review* 58: 64–71.

———. 1990. Entrepreneurship: Productive, unproductive, and destructive. *Journal of Political Economy* 98: 893–921.

———. 2010. *The microtheory of innovative entrepreneurship*. Princeton, NJ: Princeton University Press.

Baumol, W. J., R. E. Litan, and C. J. Schramm. 2007. *Good capitalism and bad capitalism, and the economics of growth and prosperity*. New Haven, CT: Yale University Press.

Braunerhjelm, P., Z. J. Acs, D. Audretsch, and B. Carlsson. 2010. The missing link: Knowledge diffusion and entrepreneurship in endogenous growth. *Small Business Economics* 34: 105–25.

Cantillon, R. 1755/2001. *Essay on the nature of commerce in general*. New Brunswick, NJ: Transaction Publishers.

Carlsson, B., and A. Fridh. 2002. Technology transfer in United States universities. *Journal of Evolutionary Economics* 12: 199–232.

Casson, M., B. Yeung, A. Basu, and N. Wadeson. 2006. *The Oxford handbook of entrepreneurship*. New York: Oxford University Press.

Desai, S., Z. Acs, and U. Weitzel. 2010. A model of destructive entrepreneurship. UNU-WIDER Working Paper No. 2010/34 (April). Helsinki, Finland: United Nations University-World Institute for Development Economics Research.

Haltiwanger, J., R. S. Jarmin, and J. Miranda. 2010. Who creates jobs? Small vs. large vs. young. NBER Working Paper 16300 (August). Cambridge, MA: National Bureau of Economic Research.

Hayek, F. A. 1945. The use of knowledge in society. *American Economic Review* 35: 519–30.

Kirzner, I. M. 1979. *Perception, opportunity, and profit*. Chicago: University of Chicago Press.

———. 1985. *Discovery and the capitalist process*. Chicago: University of Chicago Press.

Knight, F. H. 1921/1971. *Risk, uncertainty and profit*. Chicago: University of Chicago Press.

Landis, D. S., J. Mokyr, and W. J. Baumol, eds. 2010. *The invention of enterprise*. Princeton, NJ: Princeton University Press.

Maddison, A. 2007. *Contours of the world economy, 1–2030 AD*. New York: Oxford University Press.

North, D. C. 1990. *Institutions, institutional change and economic performance*. New York: Cambridge University Press.

Parker, S. C. 2009. *The economics of entrepreneurship*. New York: Cambridge University Press.
Phipps, B. J., R. J. Strom, and W. J. Baumol. 2012. Principles of economics without the prince of Denmark. *Journal of Economic Education* 43: 58–71.
Romer, P. M. 1990. Endogenous technological change. *Journal of Political Economy* 98: S71–S102.
Schumpeter, J. A. 1911/1983. *Theory of economic development.* Cambridge, MA: Harvard University Press.
Weber, M. 1930/2002. *The Protestant ethic and the spirit of capitalism*. New York: Scribner's.
The World Bank. 2012. *World development indicators 2012*. Washington, DC: The World Bank.