

## Canonical Models in the Economics of Entrepreneurship

The selection of specific articles for review was informed by Simon C. Parker, The Economics of Entrepreneurship, 2005.<sup>1</sup>

Parker calls the studies ‘canonical’ because “they form essential and commonly used building blocks for thinking about, and answering,” some of the most basic questions regarding entrepreneurship. In identifying these studies Parker focuses our attention on “a large set of versatile and powerful theories and methods to the study of entrepreneurship.” These studies are “usually but not always quantitative, are often based on models of optimizing behavior under uncertainty, and utilize empirical approaches founded on the econometric analysis of large and representative data samples.”

Following Parker’s lead, I have lumped these research studies into five categories—

**Occupational Choice Theory** (looking at the decision-making process by which one chooses a career; economic analysis would suggest an individual will opt for an occupation that will maximize the present discounted value of the expected income stream), **Credit Rationing** (a situation where lenders limit the supply of credit to borrowers regardless of the willingness of the borrower to pay higher interest rates; typically imperfect information is seen as the explanation) **and Investment** (broadening the idea of flow of funds beyond bank borrowing to look at all forms of funds being made available for business activity ), **Innovation** (a key component of evolving economic theory that puts productivity gains from knowledge and technology at the heart of development; an essential element of endogenous growth theory), **Human Capital** (closely linked to innovation is the notion of augmenting human input by enhancing knowledge and advancing skills), and **Social Entrepreneurship** (the application of business and nonprofit approaches to find solutions to pressing social/economic challenges).

### Occupational Choice Theory

We will try to understand why individuals choose to become entrepreneurs, essentially pursuing self-employment rather than working for someone else.

Lucas, “On the Size Distribution of Business Firms,” argues that “individuals differ in terms of their innate entrepreneurial ability. He assumed that ability is distributed continuously across the workforce; that agents operate under certainty; and that there is no separation of ownership and control.” Lucas concludes that the most able entrepreneurs end up running their own firms. While not essential to the occupational choice model, Lucas also argued that “as economies accumulate capital, they are likely to witness a shift of workers from entrepreneurship to paid employment.” The validity of this argument, debated by many, should not detract from the insight Lucas provides—individuals pursue that path that provides the highest likelihood of success (he focuses on financial success; later we’ll consider other types of rewards).

Holmes and Schmitz, “A Theory of Entrepreneurship and Its Application to the Study of Business Transfers,” seem to incorporate the ideas of Schumpeter and Kirzner in that they assume the economy is in a permanent state of disequilibrium. As such “individuals are continually exposed

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<sup>1</sup> Unless otherwise specified quotations come from Parker’s book.

to new opportunities, which are spawned by exogenous technological progress, but they differ from each other in the probability that their new ventures will survive.” Holmes and Schmitz argue that in this world of constant change, one that affords opportunities, “the least able types will only manage existing firms, while the most able individuals specialize in setting up new businesses.”

Jeremy and Quinn included in their powerpoint (and provided via handout) the figure that Holmes and Schmitz use to depict occupational choice. While the ‘curvy lines’ are a bit difficult to explain, the overall concept behind this figure is important. It combines entrepreneurial ability on the horizontal axis,  $\Theta$ , with business quality on the vertical axis,  $q$ . In the upper right quadrant is the ‘sell and start new’ which gives us the serial entrepreneur. In the lower right we see the ‘discontinue and start new’ which again is the serial entrepreneur. Holmes and Schmitz are suggesting that those with high entrepreneurial ability will regularly engage in new ventures. This is an important point as we move forward. Something is driving these individuals to be/remain entrepreneurs.

Kihlstrom and Laffont, “A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion,” build their approach on the work of Knight. They model “entrepreneurial choice as trading off risk and returns.” The least risk-averse choose entrepreneurship and, by the way, end up running the largest businesses. Kihlstrom and Laffont also suggest that access to capital is a determining factor in one’s decision to become an entrepreneur, although this isn’t the major contribution of their study. Note that this paper argues that the entrepreneur provides the ability and bears the risk. This is something we’ll explore later when we consider whether entrepreneurial activity is enhanced or hindered when risk is spread across the economy.

Note that Kihlstrom and Laffont assume entrepreneurial ability is spread equally across the work force. With this assumption, only aversion to risk influences one’s occupational choice. They can argue this in part because they connect risk aversion with the possession of wealth.

### **Credit Rationing and Investment**

This area of analysis opens an entirely different line of reasoning. While occupational choice models may allude to the importance of financing, these studies put it at the core of why and when individuals undertake entrepreneurial activities. This shifts the locus of control from the individual to an outside source (the funding agency).

Stiglitz and Weiss, “Credit Rationing in Markets with Imperfect Information,” argue that there is an information asymmetry in the credit market. Entrepreneurs seeking funds have more information about their endeavors than do the credit-granting agencies. Lenders can’t discern the full degree of riskiness of a particular entrepreneurial endeavor. Stiglitz and Weiss argue that the result is that lenders set interest rates too low fearing that if they set interest rates high only entrepreneurs with very risky projects (thinking they have the potential for high returns) would borrow. This would increase the likelihood of default. But, despite lower than optimum interest rates, loans are allocated based on perceived viability of entrepreneurial projects. Always cautious, lenders end up under-investing in entrepreneurial activities.

De Meza and Webb, “Too Much Investment: A Problem of Asymmetric Information,” conclude just the opposite—too much lending. This is because in their model “entrepreneurs differ from

each other in terms of expected returns (rather than risk), with the ablest entrepreneurs having the greatest probabilities of success. Ability is unobserved by banks, which again have to offer a pooled interest rate. This means the ablest entrepreneurs end up cross-subsidizing the least able, which entices into entrepreneurship individuals with socially inefficient projects.”

Both of these studies, while differing in final result, identify a problem—imperfect information. This is the case regardless of whether the basis for making a decision is the riskiness of the project or the expected returns.

The prevalence of imperfect information, and its influence on borrowing potential for entrepreneurs, may help explain why so many studies see a strong correlation between one’s wealth and the likelihood of undertaking entrepreneurial activity.

Evans and Jovanovic, “An Estimated Model of Entrepreneurial Choice under Liquidity Constraints,” is one of the studies that fits into this category. While not as robust as the previous two studies, Evans and Jovanovic underscore the imperfect nature of credit markets and highlight wealth as a determining factor in entrepreneurial activity.

Note that this paper illuminates the differences between Knight’s understanding of the entrepreneur and that of Schumpeter. Knight stresses risk and acknowledges the existence of imperfect credit markets that hinder the availability of capital for entrepreneurial activity. Schumpeter separates the functions of the entrepreneur and the capitalist (funder).

The diagram that Liam and Robert incorporated into their powerpoint is very useful. It tries to outline the fluidity of the relationship between entrepreneurial ability on the vertical axis,  $\Theta$ , and wealth on the horizontal axis,  $Z$ . Ability is important, but wealth is more important in explaining which would-be entrepreneurs are unconstrained.

## **Innovation**

Perhaps innovation has arisen more in our discussions than any other single factor. It was crucial in Schumpeter’s thinking and we’ll spend considerable time exploring its importance. Jovanovic, “Selection and the Evolution of Industry,” tries to show that “entrepreneurs learn from a series of stochastic draws that come from the market. Based on constantly arriving new information, entrepreneurs adjust their beliefs and their market strategies. Able entrepreneurs survive and grow, while less able (or unlucky) exit the market.” Jovanovic attributes entrepreneurial success not to capital availability but to efficiency which in turn is determined by innovation.

An interesting, and probably debatable, finding of this study is that newer and smaller firms will have higher, and more variable, growth rates. The rapid growth of small firms suggests something akin to Baumol’s ‘david and goliath’ discussion. If Baumol is correct, the successful small firm will be co-opted by the large firm, thus assuring that Jovanovic’s conclusion is correct. Klepper, “Entry, Exit, Growth, and Innovation over the Product Life Cycle,” attempts “to explain the temporal pattern of innovations and market concentration as industries evolve. It can also explain why the pace and importance of major product innovations and new firm entries slow down as industries age, and the increasing importance of process innovations at later stages of the industry’s life.”

There is a lot in this paper. The most important finding for our analysis is that innovation becomes more process oriented as a firm/industry matures. This is probably something Baumol

would challenge as he seems to argue that product innovation is the life-blood of firm success. We'll come back to this discussion several times in the rest of the term.

### **Human Capital**

Lazear, "Entrepreneurship" and "Balanced Skills and Entrepreneurship," brings an entirely new insight into our discussion of entrepreneurship. His approach can fit into the occupational choice discussion but probably exists outside the innovation discussion. Lazear suggests "that entrepreneurial selection and performance are guided by the mix or balance of skills held by individuals, rather than by specialized expertise." He claims entrepreneurs are 'jacks of all trades' rather than experts. In his model the experts gravitate to salary work.

The question that should immediately arise when you read of this finding is what happens as technology becomes more and more sophisticated. Does technological advance preclude the 'jack of all trades' or enhance his/her role? We'll spend a bit of time later talking about technology and the idea that the inventors—what we might call empiricists—are the specialists. They function in tandem with other empiricists, in incubators, bringing forth new ideas. They are not the entrepreneurs; the entrepreneurs are those who bring the invention to market. If this is in fact the case, then Lazear's idea of the 'jack of all trades' may hold great promise for our discussions.

As you reflect on Lazear's findings think about whether his approach reminds you more of the Schumpeterian or Knightian explanation of entrepreneurship.

### **Social Entrepreneurship**

In one sense the paper by Glaeser and Shleifer, "Not-for-Profit Entrepreneurs," is an outlier. It raises all sorts of questions about occupational choice models and about risk aversion. Why would an individual start a social, not-for-profit, operation rather than a profit-maximizing enterprise?

Glaeser and Shleifer attempt to explain this by exploring structural factors that favor non-profits. They term these factors Non-distribution constraints—a legal restriction that prevents owners receiving any surpluses in the form of equity shares. Non-profits may be able to attract investment because the entrepreneur who starts the enterprise cannot extract returns. Investors get the assurance that what they want to promote will not be undercut by profit-taking.

The findings of this paper are interesting, but they don't get us very far in understanding why the entrepreneur chooses this route, unless there are non-pecuniary factors at play. Baumol opened the door to these; we'll explore this possibility much more extensively with Shane's book.