

LIV. Entrepreneurship

- A.** The indirect production of goods and services for sale rather than for one's own direct consumption is the one of the most obvious differences between subsistence and developed economies. In a modern economy, production is also much more indirect, or round-about, than in earlier periods. Partly this reflects differences in the state of knowledge concerning the methods by which production can be undertaken, but also in the methods by which production can be organized. The original organization of an economic enterprise is undertaken by its "entrepreneur." He/she perceives the profit opportunity, and takes steps, such as forming a firm, to realize them.
- B.** The economic role of the entrepreneur is relatively underexamined, but nonetheless plays a central role in much economic analysis. Although rarely directly modeled, the entrepreneur plays a variety of *implicit* roles in the economic theory of the firms and economic development.
- C.** Theories of the Entrepreneur
- i. *Knight: the entrepreneur as risk taker.* Knight argues that the unique role of the entrepreneur is risk taking. He argues that many individuals are aware of potentially profitable market opportunities, but that in each case, the profits that may be realized can not be known with certainty. Not only are true profits randomly distributed, but many of the parameters of the distribution are unknown, indeed unknowable. Such opportunities are risky and *not insurable*. In Knight's view, entrepreneurs take well-known but risky ventures, and realize *profits* if they are in some sense lucky.
 - ii. *Schumpeter: the entrepreneur as innovator.* Schumpeter argues that entrepreneurs invent new products or production methods which create new markets or totally transform an existing market. He terms this fundamental phenomena: the *process of creative destruction*. The entrepreneur destroys an existing equilibrium and creates a new one. Innovation is inherently unpredictable, which makes economic development somewhat irregular and prone to great sudden advances. (Examples of dramatic innovations from this century include: mass production of the automobile and personal computer.)
 - iii. *Kirzner: the alert arbitrageur.* Kirzner argues that the fundamental entrepreneurial activity involves "seeing" previously unnoticed opportunities for profit. He argues that alertness to economic activity can not be subcontracted out as raising capital or managing day to day operations can be. Moreover, insofar as unrealized gains to trade are gradually eliminated via entrepreneurship, he argues that entrepreneurship is an important equilibrating process. In the very long run, he anticipates a long run market equilibrium similar to that of neoclassical models. But in the short run, unrealized gains to trade, e. g. profit opportunities, are commonplace. Witness the huge number of economic enterprises formed every day.
 - iv. *Alchian and Demsetz: the entrepreneur as residual claimant.* Alchian and Demsetz argue that the difference between firms and other forms of economic organization is the existence of a residual claimant: e.g. one person (or small group) with an interest in the net benefits (profits) realized by the enterprise. This gives the entrepreneur an incentive (as we have previously noted in the first part of the course) to assure that production costs are minimized and that outputs are at profit maximizing levels.

- D.** In practice, the entrepreneur as also a contract writer. Williamson(?) has described a firm as a locus of contracting activity. It is fair to say the overarching contracts which define an enterprise are drawn up by the entrepreneur and others supplying resources to the enterprise.
- i. Once a product market or vector of product markets is selected, marshaling the proper resources for production, ensuring that they are employed properly, and *creating incentives for the inputs employed to advance the firm's interest* all become important, indeed critical, tasks for the entrepreneur.
 - ii. One large area of modern research that implicitly concerns entrepreneurship deals with devising optimal contracts for solving these problems in settings where the entrepreneur's information is imperfect and, thus, it is difficult to pay each employed factor its marginal product.

LV. The Principal-Agent Problem

- A.** One problem faced by a firm owner is that his interests and the interests of his employees differ under many common contracting practices. At a fixed hourly wage or salary W , an employee has an incentive to "serve his time" at least cost rather than to work as hard and effectively as possible to increase the firm's profit. This motivational problem is an important aspect of the Principal Agent problem.
- B.** One method of dealing with malfeasance is to monitor shirking behavior on the part of one's employees and penalize them in some way.
- i. For example, suppose that the both the firm owner and the employee allocate time, T^o and T^e respectively, to maximize similar utility functions: $U = u(Y, L)$. The employee allocates time between leisure and working, and the owner allocates time between leisure and monitoring. The firm's owner's income depends on the amount of effort productive use of the employee's time: $\Pi = f(T^e - L^e) - W$. The employee's income is his ordinary wage income less a fine, F , that is imposed on him if he is caught. (The fine may be thought of as a postponed promotion.)
 - ii. Suppose that the probability of being caught increases as the employee engages in more shirking (L^e) and as the owner engages in more monitoring (M^o), $P = p(L, M)$.
 - iii. To simplify the math a bit, assume that the owner and employee are both risk neutral.
 - iv. The employee maximizes $U = u((W - p(L, M)F), L)$ which requires L^* satisfying:
 $-U_Y P_L F + U_L = 0$ which implies that $L^* = l(W, F, M)$.
 - v. [Note that a more greedy or ambitious firm owner will get more income out of the same employee than a less greedy or ambition firm owner. Note also that from the point of view of this society of two, that either kind of firm owner engages in too much monitoring effort. Why?]
- C.** Monitoring here, ensures that the employee engages in some productive activity while on the job. In a limiting case, it is possible that all shirking is eliminated, but clearly motivation becomes more problematic as firms become large and ownership diffuse.

LVI. Screening: Hiring the Most Productive Person for the Right Job

- A.** One of the problems facing a firm owner is finding the right person for each job in the firm. Not all employees are created equal. Some are more talented, have more education, have a stronger work ethic or greater honesty, others have more experience.
- The second and forth of these are observable in principle: as employees submit vita's characterizing their backgrounds. The first and third of these characteristics are not.
 - In any case, there are often informational problems in deciding whom to hire.
 - The characteristic of interest may be well known to the employee, but the employees can not just tell the owner about their talent. "Cheap talk" is discounted by the owner.
 - To solve this problem, the owner may try to devise a contract which causes potential employees to sort themselves out: for example, into groups with different talent levels.
- B.** A contract (game) that causes potential employees to sort themselves into groups is said to have a "separating equilibrium." A contract that does not induce any sorting is said to have a "pooling equilibrium." However, not all separating equilibria are helpful. Some induce the problem of "adverse selection" where the undesirable employees "crowd out" the more desirable ones. [Akerlof's famous lemons problem is an example of a perverse separating equilibrium.]
- C.** An Illustration: Suppose that the skills that a firm is interesting in are correlated with academic talent. E. g., people who find it easy to get good grades in school will be expected to be more productive within the firm. The firm proposes to pay people more if they received higher grades in school or have higher degrees: w^o for $G < G^*$ and w^v for $G > G^*$. To "simplify" further, suppose that there are just two types of people: very talented, t^v , and not so talented t^o . Grades increase as time spent studying, S , increases for a given talent level, $G = g(S, t)$. (The opportunity cost of a high grade is lower for a talented individual than for a less talented one.)
- Each maximizes a utility function defined over leisure and income (here at school work).
 - $U = u(W, T - S)$ where $W = w^o$ if $g(S, t) < G^*$ and $W = w^v$ if $G > G^*$.
 - Note that solutions to this problem are essentially corner solutions. (There is a kinked total benefit curve for academic achievement but a rising cost curve.) This is a common assumption in these models, but is not entirely necessary. (See Kreps ch. 17.)
 - In a pooling equilibrium both groups invest in the same level of education either $S = 0$ or S is just sufficient for each to achieve G^* .
 - In the separating equilibrium the high talent individual study enough to secure grades greater than G^* and the less talented group doesn't study at all, and receives grade $G < G^*$.
 - In this last case, the contract has sorted potential employees into relevant groups for the firm.
 - [Education is in this game said to be a "signal" by which potential employee's try to inform potential employers of their talent and/or gumption.

LVII. Motivation by Contingent Contracts

- A.** After hiring the right people, the motivational problem remains. Monitoring with creditable punishments is one way of discouraging shirking, as we have seen. Alternatively one may devise contracts with *effort incentives*. The hidden action or moral hazard problem is most interesting in cases where even low effort levels may occasionally secure high output results. (Even a lazy salesman may make a great sale.)
- B.** In principle, an incentive contract has to satisfy two constraints: it has to be attractive enough to cause the potential employee to take the job (the *participation constraint*), and it has to encourage the optimal effort from the employee once he accepts the job (the *incentive constraint*). The best contract will satisfy these two constraints *at least cost*.
- C.** A simple example: In the non-stochastic shirking problem developed above, if one can observe an employee's output, but not effort, salary could be conditioned on output rather than being fixed at W . Note that some compensation schedules eliminate shirking. E. G. an output based reward system such that: $U_Y Y_L > U_L$ for all L . [Piece rate contracts, and many contracts in sports and sales seem to do this.]
- In the stochastic case, one can not infer effort by observing output, but the same logic applies. One can make *expected* marginal benefits of not shirking greater than that of shirking over the range of interest.
 - Note that the conditions at the margin, are sufficient to satisfy the incentive constraint, inframarginal payments are required to satisfy the participation constraint (the employee has to earn his opportunity cost wage).

LVIII. Review Problem

- A.** Many salesmen work on commission. That is to say, they receive a salary that is based partly on the dollar value of goods sold during the salary period. The compensation is usually not entirely commission but includes a fixed salary or hourly wage as well.
- Discuss how this compensation system addresses both the screening and motivation problems faced by firm owners.
 - Try to demonstrate mathematically, the conditions under which a fixed rate commissions system will be an efficient contract for the firm owner.
- B.** Kirzner has argued that the neoclassical model can not really model the behavior of entrepreneurs because alertness (as opposed to searching) can not be modeled.
- Try to model "alertness" and discuss your model's limitations.
 - Contrast Kirzner's conception of the entrepreneur with Knight's.