ENTREPRENEURSHIP AS A UTILITY MAXIMIZING RESPONSE

Executive Summary

Research on entrepreneurship has investigated what entrepreneurs do, what happens when they act as entrepreneurs, and why they act as entrepreneurs. This paper contributes to the latter investigation, and specifically asks why some people choose to be entrepreneurs while others choose to be employees. Responding to prior literature recognizing the lack of a coherent theory of entrepreneurship and calling for a rigorous examination of the decision to become an entrepreneur, this paper presents an economic model of the career decision. We postulate that the individual chooses an entrepreneurial career path, or a career as an employee, or some combination of the two, according to which career path promises maximal utility (or psychic satisfaction).

We assume that the individual's utility from any particular occupation, whether self-employed or employed, depends on income (which depends in turn on ability), as well as working conditions such as decision-making control, risk exposure, work effort required, and other working conditions (net perquisites) associated with that occupation. Individuals will exhibit either preference or aversion towards each of the specified working conditions, and it is the degree of that preference or aversion, in conjunction with the quantum of each working condition, which determines the total utility that the individual will derive from each particular occupation.

We show that all employees will have an incentive to be self-employed (if they could assemble the same resources as their employer). Also, the greater is their managerial and entrepreneurial ability, the greater will be their incentive to be self-employed, other things being

equal. Next, we show that a more positive attitude to work (i.e., a lesser aversion to work effort required) provides a greater incentive to be self-employed.

The individual's degree of risk aversion also influences the choice to be an entrepreneur. The more tolerant one is of risk bearing, the greater the incentive to be self-employed. Similarly, the greater the preference for independence, or decision-making control, the greater the incentive to be self employed. Finally, it is noted that perquisites (and avoidance of irksome elements) can potentially be controlled to a greater degree when self-employed, so the individual will consider the differences in these other working conditions when contemplating a career choice.

But it is the sum of the utility and disutility from these sources which determines the career decision. Thus, we demonstrate that positive attitudes toward risk, work, and independence are neither necessary nor sufficient conditions for a person to want to be an entrepreneur. Because entrepreneurial abilities and attitudes are desirable in employment situations, an employer may choose to bribe an entrepreneurial individual to be an employee by offering more income and greater independence, for example.

We demonstrate that firms recruiting employees, or venture capitalists considering funding an entrepreneur, should in their own best interests investigate the person's attitudes toward income, risk, work, and independence as well as their abilities, since these attitudes underpin the person's worth as an employee and their incentive to be self-employed. Management educators should design programs which enhance the entrepreneurial abilities and attitudes of individuals, and the individuals themselves should consider their 'attitudinal' make-up before committing to entrepreneurship.

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Abstract

We develop a utility-maximization model to explain why some choose to be entrepreneurs while others prefer employment. The individual's utility from any occupation is assumed to depend on income, work effort, risk bearing, independence, and other working conditions of that occupation. The individual chooses the occupation and career path that maximizes utility. We demonstrate that the incentive to be an entrepreneur increases with entrepreneurial ability and the 'positiveness' of one's attitudes toward income, risk, hard work, or independence. But positive attitudes are neither necessary nor sufficient conditions for entrepreneurial intentions, and thus 'entrepreneurial' people might happily work for someone else.

INTRODUCTION

Following Stevenson and Jarillo [1990], entrepreneurship research can be classified under three main categories: namely *how entrepreneurs act* (i.e. what it is they do); *what happens when entrepreneurs act* (i.e. what are the outcomes of their actions); and *why people choose to act as entrepreneurs* (i.e. what motivates them to be entrepreneurs). This paper contributes to the latter category. In particular, we respond to the call by Bygrave and Hofer [1991] "to develop models and theories built on solid foundations from the social sciences." While almost all prior research in this area has used psychology and sociology as the base disciplines, this paper investigates the issue using economics as the base discipline.

We develop an economic theory of entrepreneurship that explains the individual's choice to be self-employed or an employee of an existing organization in a more complete manner than do previous contributors. We utilize the utility-maximization model of human behavior, whereby the individual will choose the career option that promises the greatest expected utility.

We make a clear analytical distinction between abilities and attitudes, and show that superior entrepreneurial abilities are likely to predispose a person towards entrepreneurship, other things being equal. We then examine three main attitudes which one might expect to differ between those intending to be self-employed and those intending to be employees. These

attitudes are those toward (i) hard work; (ii) financial risk, and (iii) what we call 'independence'. We also consider the utility derived from other aspects (working conditions) of the available employment or self-employment situations.

The Literature

Economists have largely examined what entrepreneurs do and how they do it. To the classical economists, the entrepreneur assembled the factors of production and took the risk of producing a product that would sell for more than the cost of production. Schumpeter [1934] focused on innovation as an integral role of the entrepreneur, who creates or expands a firm to supply needed inputs or outputs, or to connect different markets, and/or to create, expand or modify a market. For an excellent survey of the economics literature on what entrepreneurs do and how they do it, see Hebert and Link [1988], and on the role of the entrepreneur in economic theory see Barreto [1989]. More recently Holmes and Schmitz [1990] and Baumol [1990] characterize entrepreneurs as people who respond to opportunities for creating new products and services that arise due to technical progress, and they note that entrepreneurial abilities differ across people.

But why do people want to be entrepreneurs? Casson [1982] states "there is no economic theory of entrepreneurship" but does not adequately address the 'why' question. Evans and Leighton empirically test for the characteristics of individuals who make the choice between employment and self-employment, and they conclude "Economists have a lot to learn about entrepreneurship… Behavioral models that can help explain (that the choice of self-employment is independent of age or experience) would be helpful" [1989: 532].

Baumol proposes "how the entrepreneur acts at a given time and place depends heavily on…the reward structure in the economy...(or) the prevailing rules of the game that govern the payoff " to entrepreneurship [1990: 894]. In defining entrepreneurs as persons who are ingenious

and creative in finding ways to add to their own wealth, power, and prestige, Baumol [1990] is suggesting that individuals choose to be entrepreneurs when or because their utility (from wealth, power, and prestige) is maximized by so doing.

Campbell states "economic theory has yet to make a concerted effort at explaining entrepreneurship... or its determinants" [1992: 21]. Campbell [1992] develops a model where the individual chooses to be an entrepreneur if the expected net present value of profit from entrepreneurship is positive, or supplies wage labor otherwise. While Campbell allows for the individual's attitude toward risk and the monetary value of the psychic costs and benefits of entrepreneurship, he does not consider how these psychic costs and benefits impact the decision to become an entrepreneur except via their (monetary equivalent) impact on the NPV calculation. Nor does he explain why these psychic costs and benefits might differ from person to person.

Following Holmes and Schmitz [1990], Gifford [1993] distinguishes entrepreneurial ability (the ability to recognize a new profit opportunity and to acquire resources…to exploit it) from managerial ability (the ability to maintain the profitability of current operations), and demonstrates that individuals' prior endowments of these skills determines their choice of career as either entrepreneur, entrepreneurial manager (intrapreneur), or salaried employee (perhaps a manager). Following Kirzner [1979], Gifford [1993] proposes the entrepreneur is alert to and responds to profit opportunities, and the career choice depends on the expected profit as an entrepreneur. While the Gifford model advances our thinking substantially, it is more concerned with the optimal size of the firm than it is with what motivates individuals to be entrepreneurs (other than a simple profit motive).

Eisenhauer [1995] builds an economic model of the decision to be an entrepreneur based on the expected utility gained, not simply from the prospective income streams, but also

dependent on utility derived from the working conditions of the employment versus self-employment alternatives. We agree with this general approach, and will expand it substantially to link income potential to an individual's ability and entrepreneurial attitudes, and more fully investigate the working conditions in terms of the individual's attitudes to specific work conditions such work effort required, risk exposure, and decision-making autonomy.

Beyond economics, other social scientists have attempted to explain the emergence of entrepreneurs in terms of their personalities, their attitudes, and their intentions. Early attempts to define the distinguishing personality characteristics of entrepreneurs met with only modest success (e.g., Brockhaus, 1975; Brockhaus and Horwitz, 1986; Begley and Boyd, 1987). To increase explanatory power it was postulated that entrepreneurs share common demographic characteristics. (e.g., Cohen, 1980; Jacobowitz and Vidler, 1982; Hisrich, 1986).

But although entrepreneurs do share many common personality and demographic characteristics, many other individuals with the same characteristics choose to be employees, and some successful entrepreneurs appear to lack what have been considered vital characteristics. Moreover, since personality and demographic characteristics are generally established at birth and/or at early stages in life, these 'characteristics' approaches to explaining entrepreneurship effectively assert that entrepreneurs are a product of their upbringing, and as a corollary, it is difficult or impossible to learn to be an entrepreneur if one was not lucky enough to inherit the right kind of parents.

Robinson, Stimpson, Huefner and Hunt [1991] argue that 'attitudes' are a better predictor of entrepreneurial tendencies than are characteristics. Attitudes are learned, and while they do depend to some degree on one's upbringing, family values, work and social environment, they can and do change over time as the individual interacts with the environment in which he/she

lives and works. Exposure to new information and to the attitudes of others, as will occur in formal educational programs and in work experience, may be expected to change most people's attitudes to at least some extent.

But possessing entrepreneurial attitudes does not necessarily motivate a person to start a new venture. Shapero [1975, 1982], Ajzen and Fishbein [1980] and Ajzen [1987, 1991] argue that intentions provide critical insights into behavioral processes, and robustly predict and explain behaviors. Krueger [1993] argues that personalities and demographics are exogenous issues that have an indirect impact on entrepreneurship via attitudes, while attitudes in turn have an indirect impact on entrepreneurship via intentions.

A MODEL OF ENTREPRENEURIAL INTENTIONS

What is needed is a model to explain why some people will form an intention to become an entrepreneur while others form the intention to work as an employee. The model should explain not only why an individual 'leans towards' entrepreneurship but also why that person may nonetheless chose to work for someone else. It should accommodate, for example, those gaining education or experience while waiting for a better opportunity to arise; those who do not wish to give up their salary for a potentially larger but highly variable entrepreneurial income; and those who do not yearn to be their own boss because their employer allows them considerable autonomy. Finally, the theory should also explain why some apparently hopeless entrepreneurs persist in that role rather than take a salaried position with an employer.

Career Choice as a Utility Maximizing Response – The One-Period Model

Utility models of human decision making postulate that individuals select the course of action which promises, in prospect, the greatest utility (or psychic satisfaction). Since some elements of a course of action may involve disutility (dissatisfaction), such irksome elements will offset to

some degree the utility derived from more pleasurable elements of that course of action. In the context of career choice, we postulate that the individual expects to gain utility from income (derived from the goods and services which he/she can buy with that income), and either utility or disutility from work effort, risk bearing, independence, and other working conditions. In the following we first explain in detail the individual's current-period choice of 'job' in the next period, and later generalize the model to account for the individual's choice of 'career path', which is the choice of the 'job' (or series of 'jobs') that is (are) expected to maximize total utility over his/her planning horizon.

To express the individual's current-period choice between employment and self-employment in the next period, we specify that person's utility function as:

$$U_j = F(Y_j, W_j, R_j, I_j, O_j) \qquad (1)$$

where U_j represents the utility anticipated in the next period from the j^{th} job;
Y_j represents the income anticipated in the next period from the j^{th} job;
W_j represents the work effort anticipated in the next period from the j^{th} job;
R_j represents the risk anticipated in the next period from the j^{th} job;
I_j represents the independence anticipated in the next period from the j^{th} job;
O_j represents the other working conditions (including perquisites) anticipated in the next period from the j^{th} job; and
$j = 1, 2, 3, \ldots m$ represents the different jobs available in the next period.
The individual surveys the 'm' different jobs available and subsequently selects the job that promises to maximize utility during the next period. These jobs might be employment situations or self-employment situations. For simplicity we assume that if two (or more) jobs can be held simultaneously, their benefits and costs are summed and they are treated as one 'job' option. If particular jobs are not available in the next period (to this individual, at least), they are ruled out of contention, of course. Note also that periods of unemployment and periods of schooling (education and/or experience) may also be treated as 'jobs' since they may generate income or other sources of utility.

Thus, the individual intends to become a self-employed entrepreneur if the expected utility from the top-ranking self-employment option exceeds the expected utility from the top-ranking employment (or other) option. For either intention to be realized requires the availability of the associated employment opportunity, or the availability of the associated new venture opportunity and the funding to make its exploitation possible. If a sufficiently attractive employment opportunity arises before the new venture opportunity and/or its funding arises, we may expect the potential entrepreneur to take an employee position as a (probably temporary) utility-maximizing response.

We now consider in detail the determinants of the individual's utility function, and argue that some people will be more likely to want to be entrepreneurs than others, other things being equal, based on what might be called their entrepreneurial abilities and attitudes.

Entrepreneurial Abilities

Baumol [1990], Holmes and Schmitz [1990], and Gifford [1993] discuss differential entrepreneurial abilities, and argue that people with greater such abilities will tend to self-select as entrepreneurs. The term 'entrepreneurial ability' is used here to encompass all the skills possessed by an individual which contribute to his/her productivity on the job, and include opportunity recognition and screening, business planning, creative problem solving, strategic marketing, financial management, human resource management, and leadership and persuasive skills.

In some writings there is confusion between entrepreneurial abilities and entrepreneurial attitudes, where some so-called 'attitudes' may be more appropriately considered abilities, as in Robinson et al. [1991]. For example, the perception of lucrative market opportunities is the manifestation of specific abilities. Similarly, making quick decisions to exploit that opportunity

also requires specific abilities. A person might need an inquisitive attitude to go looking for such opportunities, and an impatient attitude towards making decisions in order to quickly exploit newly perceived opportunities, but without the abilities to perceive and exploit opportunities the individual will not likely be a successful entrepreneur.

It is important to distinguish between abilities and attitudes, as we will show that greater ability has a distinct impact on entrepreneurial intentions, whatever the attitudes of the individual. We shall now set up the model that allows us to examine the impact of personal ability on entrepreneurial intentions.

The Supply of Work Effort

The literature on the principal-agent problem and on incentive contracting is instructive here.[1] We can utilize this framework to determine the utility an individual might derive working as an employee, and contrast this with the utility an individual might derive through self-employment as an entrepreneur. Principal-agent analysis considers the incentives of employees (agents) to work in the best interests of their employer (the principal) when their own best interests may be served by expending less time in the workplace and less effort while there (i.e., shirking). Incentive contracts, such as profit-sharing bonus schemes, may be designed to induce employee behavior that is in accord with the employer's objectives.

The individual's general attitude towards supplying work effort is assumed to be one of aversion, and we expect individuals to derive greater or lesser amounts of disutility from work and thus display greater or lesser degrees of effort aversion. In return for a market-determined salary payment, the employer expects a minimal level of work effort, and higher levels of work

[1] See, in particular, Alchian and Demsetz [1972], Ross [1973], Jensen and Meckling [1976], Shavell [1979], Fama [1980], Diamond and Verrecchia [1982], MacDonald [1984], and Demsetz and Lehn [1985].

effort[2] may be induced by the promise of a bonus or profit share. The market for managers (or employees of any skill group) will recognize the productive capability of individuals from their past performance in similar jobs, and will offer them higher salaries than for people with less productive abilities. Salary can be viewed as the market's evaluation of an individual for past productivity (and current minimal expectations) while bonus can be viewed as the incentive to induce current increases in productivity above and beyond the expected minimum.[3]

Following Douglas (1989), we present the simple analytics of the principle-agent incentive contract literature in a series of diagrams. In Figure 1 we show the impact of the employee's effort on the firm's profit. The curve P shows the incremental profit that corresponds to increasing levels of work effort provided by an employee of a given ability, and in conjunction with the work effort of all other employees and other resources of the firm.[4] The curves labeled B, B', and B" indicate different bonus rates which might be offered to the employee to induce him/her to supply work effort over and above the minimal amount which is expected by the employer in return for the salary being paid. For example, the curve B represents 40% of P at each effort level. Similarly, B' represents 60% of P, and B" represents 80% of P, at each work effort level.

[Insert Figure 1 about here]

The employee's reaction to any bonus rate will depend on his/her attitudes to work and to income. The indifference curves[5] shown in Figure 1 reflect the worker's willingness to supply additional effort in return for higher bonus levels. For bonus rate B, the highest indifference curve (level of utility) attainable is indicated by the curve labeled I_1, and thus this worker will

[2] Work effort is defined as the product of time spent working and an index of work intensity.
[3] See Ciscell and Carroll (1980) and Santerre and Douglas (1990).
[4] Note that this curve is net of the employee's market-determined salary cost and any other incremental costs of production associated with that person's employment.

maximize utility by providing the level of work effort signified by E. Similarly, for bonus rate B', the highest attainable utility is shown by indifference curve I_2 and the worker maximizes utility by providing effort E', and so on for higher bonus rates. It follows that the locus of the tangency points between the bonus curves and the indifference curves trace out this worker's supply curve of effort, shown as the curve S. Thus, an effort-averse worker will have a backward-bending supply curve of work effort, with a maximum level of effort (shown as E' in this case) that the employee would be willing to provide. After some point, the response to higher bonus rates is reduced effort as the worker shirks more and exercises an increasing trade-off in favor of leisure.[6]

The Optimal Bonus Rate

Surprisingly, perhaps, it is never profit maximizing for the employer to pay a bonus rate high enough to induce maximal effort, given diminishing returns to effort and the worker's increasing disutility of effort.[7] This is demonstrated in Figure 2, where isoprofit curves R, R', R" and so on, are introduced to represent the employer's residual profits after payment of a bonus of varying sizes.[8]

[Insert Figure 2 about here]

The profit accruing to the employer would be zero if the bonus rate was 100%. Hence, the zero-valued isoprofit curve, shown in Figure 2 as the curve R, is coextensive with the P curve when B = 100%, as we saw in Figure 1. The curve R' is a higher-valued isoprofit curve, where the vertical difference between R and R' is a constant dollar amount (shown as $100,000 in this

[5] An indifference curve is a locus of combinations that yield equal utility. Higher curves promise greater utility than do lower curves, and are therefore preferred by a person wishing to maximize his/her utility.
[6] Since work effort is the product of both time spent on the job and intensity of effort provided while on the job, this leisure may be taken both on the job and/or by reducing work hours.
[7] A person who is effort preferring, or who is only very slightly effort averse (such as a workaholic) may not reach the point where the effort supply curve bends back before he/she collapses from physical exertion. In that case the supply curve of effort simply goes vertical at the maximum possible effort level. See Douglas (1989).

case) meaning that the bonus paid to the employee is $100,000 less than it would have been on the curve R if the employee had received all the profit as a bonus. Similarly, the isoprofit curves R", R‴, and R"" represent still higher levels of residual profit accruing to the employer, (shown as $200,000, $300,000 and $400,000) because the bonus paid to the employee is smaller than the maximum possible by these amounts.

The highest attainable isoprofit curve is R‴, because the employee's supply curve of work effort is only just tangential to R‴ and falls short of any higher isoprofit curve. To maximize the firm's residual profit, the employer should therefore offer the bonus rate indicated by the curve B* in return for which the employee will supply effort level E_1, somewhat below his/her maximal level. Thus the employee produces P_1 dollars of incremental profit out of which he/she is paid B_1 dollars as a bonus, and the employer's residual income is R'".

The Incentive to be an Entrepreneur

The employee's incentive to be an entrepreneur can be seen in Figure 2. Assuming the person could set up his/her own business and hire all necessary resources to emulate the employer's business, he/she would maximize utility (on indifference curve I*) by expending effort E* and receiving total profits of P*. Thus by increasing the supply of effort from E_1 to E*, the person could disproportionately increase his/her income, from B_1 to P* in this case, by choosing the entrepreneurial option.[9]

The Impact of Greater Ability on the Incentive to be an Entrepreneur

[8] An isoprofit curve is a locus of equal profit levels. The employer will wish to be on the highest attainable isoprofit curve.
[9] A major underlying assumption here is that the individual (as an entrepreneur) would be able to duplicate the employer's access to resources and thereby assemble the same combination of inputs at the same costs (as the employer did for the employment situation). In the event that the employer has monopoly access to some inputs, and/or holds trade secrets to which the employee cannot gain access, a simple comparison would not be appropriate. Instead, and more generally, the individual would compare his/her best (utility-maximizing) option as an employee with his/her best option as an entrepreneur.

The ability of the employee is reflected in the height of the profit curve. A 'more-able' employee would generate a higher profit curve, all other things being equal. In Figure 3 we show two different incremental profit curves reflecting one person with 'high' ability (P_H) and another with 'low' ability (P_L). To isolate the impact of ability we assume they have the same attitude to work, i.e., identical preferences with respect to utility from income and disutility from work effort. The low-ability person would be hired at his/her market salary rate and would be offered a bonus of B_L in return for a commitment of E_L work effort, which is expected to produce P_L profits. The high-ability person would be offered a contract for E_H work effort and B_H bonus to produce P_H profit.

[Insert Figure 3 about here]

If self-employed in this same situation, the low-ability person would willingly increase effort level to E_L* which would allow his/her profit-based income to increase disproportionately from B_L to P_L*. Similarly, the high-ability person under the self-employment option would increase effort to E_H* and raise his/her profit-based income disproportionately from B_H to P_H*. While the self-employment option would place both individuals on higher indifference curves, the incentive to be self-employed is unquestionably much stronger for the high-ability individual, other things being equal.[10]

This seems to imply that all employees would gain by starting their own business and duplicating the production process of their employer. So why don't they? Quite apart from the difficulty of assembling the same productive resources at the same costs, and/or having access to the funds required for an employee buyout, self-employment is not necessarily the utility-maximizing option when the other determinants of utility are also considered, as we shall see.

[10] Normally one could not compare indifference curves across individuals, but in this case we have postulated identical preference structures (i.e. work attitudes) for the two individuals so that we can isolate the effect of differing abilities.

The Impact of Differing Attitudes to Work Effort

We now recognize differential attitudes to providing work effort. These differences reflect the differing utilities individuals derive from remuneration and its uses (including leisure activities), and from the differing disutilities they derive from work effort. The same income may offer less joy to a person with few non-work leisure interests or pastimes, and the same job task may offer greater physical discomfort or mental anguish for some people than it does for others. Some employees may have non-work responsibilities (such as families) that impact their willingness to supply additional effort. Some may find long hours and intensive effort more stressful than others, and thus be less willing to supply additional effort.

It is often said that successful entrepreneurs must work long and hard hours and put their new venture ahead of their personal and family life (Hofer, 1976; Schein, 1987). Or that entrepreneurs seem to enjoy their work, and willingly work longer hours even when there is little or no promise of extraordinary financial gain, and they tend to expect the same attitude in others (Bird and Jellinek, 1988).

We need to carefully distinguish between the disutility of work effort and the utility that may be derived from some working conditions, such as social interaction, use of facilities and perquisites, and the joy of shared technical or market successes (see Eisenhauer, 1995). While most individuals derive enjoyment from some aspects of their working conditions, the attitude to work effort is typically aversion, meaning that individuals gain more utility from less work, other things being equal. Since entrepreneurship often requires long hours of hard work, often for relatively little actual remuneration, an effort-preferring person would be a prime suspect for

entrepreneurship, but our argument does not rely on this.[11] Instead we assume that the normal attitude to work is effort aversion and that individuals differ in their degree of effort aversion. That is, work is a necessary hardship that generates greater or lesser disutility for different people, but this disutility for most people is outweighed by the utility derived from the income earned and from other workplace benefits and perquisites.

In Figure 4 we depict different attitudes to work (i.e., degrees of effort aversion) for two employees of the same ability. Employee X, represented by supply curve S_X, has a higher marginal rate of substitution between income and work effort, which is reflected in steeper indifference curves (which are not shown).

That is, employee X requires a larger increment to income to induce a given increment in work effort, as compared to employee Y, who is represented by supply curve S_Y. We might characterize employee X as being more leisure-oriented, or as having a less-positive attitude toward work, while Y is more work-oriented, having a more-positive attitude towards work.

[Insert Figure 4 about here]

Employee X would be offered a contract for B_X dollars to supply E_X work effort. Note that the self-employment option is to provide E_X* work effort for a disproportionate increase in income (to P_X*). Similarly, employee Y would be offered B_Y dollars to provide E_Y work effort, and would envision the entrepreneurial option of E_Y* effort for P_Y* profit. Employee Y has the greater incentive to become self-employed assuming the disproportionately large gain in income to Employee Y gives more utility than the smaller gain in income does for employee X. Thus, the individual's intention to be an entrepreneur, rather than work for an employer, is expected to depend positively on his/her attitude to hard work, other things being equal. Whether or not the

[11] A person who derives utility from work effort would be classified as effort-preferring, and would willingly sacrifice income in return for more work effort, but this is surely is not a common reaction. In any case, it can be demonstrated that effort preference

person will actually want to be an entrepreneur, however, also depends on his/her ability, as we have seen, and on his/her attitudes toward risk and independence, as we shall see.

The Impact of Differing Attitudes to Risk

The foregoing analysis assumes that profit is a direct and unambiguous function of work effort, all other things being equal. But when profit is an uncertain function of work effort, there will be an expected profit level for each level of work effort, surrounded by a variance of profit outcomes which may eventuate due to potential changes in consumer preferences, competitors' prices and product offerings, macro-economic variables, and so on. Such potential profit variability introduces the risk that the employee (or the entrepreneur) may expend additional effort without any additional remuneration for that effort.

We assume that individuals are typically risk averse. That is, they typically require additional reward to induce them to undertake additional risk, other things being equal.[12] As such, they will be willing to trade off at least some part of the risk that *ex post* profits may not be equal to the expected value of profits (and thus that their bonus may be lower or higher than expected).

In Figure 5 we show the employee's incentive to bear some of the risk that profit outcomes may not occur as projected. Note that the individual is now seeking utility in income-risk space, with the work effort level (determined in the preceding section) held constant. Thus, the values B_1 and P_1 are carried forward from the preceding analysis. B_1 is the expected bonus associated with the contracted effort level E_1, which is expected to generate incremental profit level P_1. But under uncertainty, the employee might worry that external circumstances may

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would add even greater incentive to become an entrepreneur.

[12] All individuals are 'risk takers' but most are risk averse. That is, they will take risks, but only if adequately compensated for so doing. 'Risk preferers' gain utility from risk taking, and would willingly trade off income to gain exposure to higher risks. Risk

make it impossible to achieve profit level P_1 and hence he/she will not receive the bonus level B_1. At the same time, the employer might worry that the employee may shirk and not provide the contracted effort level, and still expect the agreed bonus payment. The employee is subject to what is known as 'moral hazard' and may choose to shirk, unless he/she shares the risk of profit falling below the projected level.[13]

Thus, both parties will be motivated to enter into a risk-sharing contract which will assure the employer that the employee is doing the utmost possible to ensure profit projections are attained, while the employee is assured that he/she will still get some share of the profit as bonus if external conditions prevent attainment of the projected profit. For simplicity of exposition, suppose the employer and employee agree to split any profit variance (from P_1) on a 50:50 basis.[14]

In terms of Figure 5, the bonus agreement consequently changes from B_1 dollars to B' dollars (from point B_1 to point L on indifference curve I_1. Note that B_1 is the 'certainty equivalent' of the expected bonus level B'. The parties agree that if the projected profit P_1 is indeed achieved, the employee will receive a bonus of B' dollars. Further, if the actual profit is different from P_1 the parties will share the variance from P_1 in the proportions agreed. For example, if actual profits fall short of expected profits, such as P_2, the shortfall is borne equally by each party, so the actual bonus paid would be equal to B' less 50% of the shortfall (i.e. P_1-P_2), which is shown as bonus level B". Oppositely, if actual profits exceed those expected, the bonus would be B' plus half the profit variance.

[Insert Figure 5 about here]

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preference is probably not a desirable attitude in an employee, where the shareholders' objectives are at stake, but it may be found among entrepreneurs. It can be shown that risk preference increases the incentive to become self-employed.

[13] On moral hazard, see, for example, Eaton and Eaton [1995] or Milgrom and Roberts [1992].

[14] The actual incentive contract (bonus rate) agreed upon between the employer and the employee will depend on the relative risk aversions of the two parties. For a simplified account, see Douglas [1989].

A potential point of agreement between the parties is point M, at the upper right-hand end of the I_1 curve. Since it is on the same indifference curve as points B_1 and L, the employee will find point M equally attractive. At point M the employee would assume 100% of the risk of profit variation for an expected bonus level B‴ if the expected profit of P_1 is indeed generated. But if the employee is to bear the entire risk of profit variance, he/she might as well become an entrepreneur and thereby 'shift' to point K, receiving all the incremental profit while taking all the risk. Since point K is on the higher indifference curve I_2, it is unambiguously preferred to any point on indifference curve I_1. If the employer wants to retain this employee, the bonus must be raised to at least the level B⁗ (the certainty equivalent of K) or slightly higher, unless the person's attitude towards independence does not preclude him/her from wanting to become an entrepreneur.[15]

Note that if the employee were to have a higher degree of risk aversion (which would be reflected in steeper indifference curves in risk-income space) the indifference curve emanating from point B_1 would rise more steeply, and might pass to the left of point K. This would mean that point K (the self-employment option) is on a lower indifference curve, and is thus considered inferior to the employment option with bonus level B_1. Thus, such a person would not wish to become an entrepreneur, other things being equal. We might say that this individual is 'too risk averse' to be an entrepreneur, but such a judgment would be premature without consideration of his/her attitude to independence.[16]

[15] Note that the bonus amount B_1 can be viewed by the employer as the minimum cost of inducing the employee to provide the quantum of effort (E_1) that culminates in expected incremental profits of P_1. Faced with the impending departure of a valuable employee, the employer may decide that the actual bonus paid can afford to be somewhere between the minimum payment necessary (B_1) and the entire incremental profit generated by the employee. In the absence of the ready availability of a similarly qualified replacement employee, and faced with recruitment costs and the costs of bringing a new employee 'up to speed' the employer may choose to raise the bonus rate rather than lose the employee.

[16] The employee's degree of risk aversion will depend on what financial and other obligations (such as family lifestyle) that person has, and what assets he/she stands to lose if income falls below expected levels. If the individual has a well-diversified portfolio of other income sources, he/she might even exhibit risk neutrality. Similarly, if the individual has virtually no assets to

Thus, we expect the strength of an individual's intention to become an entrepreneur will be negatively related to the degree of risk aversion, other things being equal. For simplicity, we shall refer to the individual whose attitude toward risk is such he/she could attain a higher indifference curve through becoming self employed, such as the person represented in Figure 5, as having a 'positive' attitude towards risk bearing. Similarly, a person who is more risk averse and who would be placed on a lower indifference curve by self-employment, will be referred to as having a 'negative' attitude towards risk bearing.

The Impact of Attitudes to Independence on Entrepreneurial Intentions

Finally, we consider the individual's attitude to what we are calling independence. By independence we mean a preference for decision-making control, a preference to serve one's own objectives rather than follow another's orders, a preference to choose one's own path to that objective, and confidence in one's own abilities which allows independent decision making rather than frequent recourse to advisors.[17] Shaver, Gatewood, and Gartner [1991] suggest that the motivation to establish a new venture is frequently personal, such as the desire to work for oneself. Such personal motives are related to independence to the extent that the individual derives satisfaction from self-centered decisions made. If one is independent, one may derive satisfaction from power, control, and the undisputed claim to any achievements.[18]

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lose, he/she might take a substantially less-risk averse stance and be prepared to accept a relatively high share of the risk of profit variability.

[17] This definition seems broad enough to encompass Shapero's [1982] 'propensity to act' and McClelland et al.'s [1953] 'locus of control', as well as Bandura's (1986) concept of 'self-efficacy' which Ajzen (1991) incorporates into his 'perceived behavioral control' construct and which Shapero (1982) incorporates into his 'perceived feasibility' construct, and Burger's [1985] 'desirability of control'.

[18] Brockhaus and Horwitz [1986] report that such 'control' constructs often fail to distinguish entrepreneurs from managers more generally. We might explain these findings on the basis that 'control' has hitherto not been measured as the degree of independence aversion or preference, as we would require, and secondly, that a desire for independence alone does not make an entrepreneur. We must consider jointly the individual's ability and his/her attitudes toward risk and hard work, and assume the lack of an employment situation, which gives greater utility.

Independence carries with it the need to make one's own decisions and the responsibility for one's decisions. While some people will enjoy these aspects of independence, others may derive disutility from this responsibility, and feel that they should receive additional remuneration if they are expected to exercise independent decision making. Thus, individuals may derive utility or disutility from independence.

We now make explicit our assumption that the terms of the previously-discussed employment contract (which did not explicitly consider the degree of independence) require zero individual decision making responsibility, meaning that all decisions made would simply be an application of one or more of the employer's policies, and/or be referred to a supervisor who decides on the course of action which is appropriate. If employees must make independent decisions for which they bear responsibility, and if employees have an attitude towards this independence, there will be indifference curves in income-independence space.

In Figure 6 we show an employee who is independence-averse to a relatively slight degree. Note that the indifference curves are now in income-independence space, and that we are holding work effort and risk exposure constant from the preceding analyses. This individual has contracted to supply E_1 effort to produce P_1 profit in return for B_1 bonus, with a side agreement on risk sharing, and assuming (at this point) that no independent decision making is required. But for positive levels of independent decision making and responsibility, this employee will require increased bonus levels to remain at the same level of utility, as shown by indifference curve I_1. As in the analysis of the risk-averse employee, this independence-averse employee would expect to gain greater utility by being self-employed at point K where he/she bears total responsibility for all decisions and receives all the incremental profit. To retain this employee, the employer must offer a bonus of B_2 or better with no decision-making

responsibility, or some combination, which falls on indifference curve I_2 or on a higher indifference curve.

[Insert Figure 6 about here]

Along the same lines as the analysis for highly risk averse employees, we can see that if an employee is highly independence averse he/she would not want to be self-employed. In terms of Figure 6, the indifference curve emanating from point B_1 would rise more steeply and pass to the left of point K, the self-employment option. Thus the employment option with bonus level B_1 offers more utility (lies on a higher indifference curve) than does the self-employment option for such a person.

In Figure 7 we show a person who is independence preferring. Such people derive utility from independence and will have indifference curves that are negatively sloping in income-independence space. This person would be prepared to relinquish income in exchange for greater independence while staying at the same level of utility (for example, combinations along indifference curve I_1). This person would attain the highest possible indifference curve as a self-employed person at point K, with total independence and total claim to incremental profits. Notice that there is no bonus level that would keep him/her employed with this employer. Even if the employer offered a 100% bonus rate, which would put the employee on indifference curve I_2 at point P_1, this person would increase utility substantially by moving to point K (presuming his/her attitude towards risk did not make self-employment an inferior outcome).

[Insert Figure 7 about here]

For simplicity, we shall refer to the individuals represented in both Figure 6 and Figure 7 as having 'positive' attitudes to independence, since self-employment would put them on a higher indifference curve than does employment, other things being equal. Conversely, an individual is

said to have a 'negative' attitude towards independence if his/her indifference curves in income-independence space are relatively steep, and as a consequence he/she would find self-employment (point K) less appealing than any one of the independence-sharing agreements represented by the indifference curve emanating from point B_1. Thus, employees with a positive attitude towards independence will prefer self-employment over employment, while those with a negative attitude toward independence might be expected to prefer employment over self-employment, other things being equal.

The Impact of Other Working Conditions on the Choice to be an Entrepreneur

Baumol [1990] and Eisenhauer [1995] examined the impact of associated benefits or other working conditions on the choice to be an entrepreneur, and we can easily incorporate this analysis into the present model. Perquisites (or perks) which generate utility will differ from job to job, but as a self-employed entrepreneur the individual will have substantial discretion in the composition of the perks made available to him/herself. Offsetting the perks are the irksome elements (the 'irks') of any job, such as troublesome co-workers, uncomfortable physical conditions, lack of amenities, and so on. Again the self-employed individual probably has more control over these as well, as compared to an employee. Thus, one would expect the self-employed individual to be able to make decisions and spend money to establish perks and remove irks, to a greater degree than an employee can, in general.

Thus, in contemplating the choice between the best employment and the best self-employment alternatives available, the individual will factor in the differences in the 'other working conditions' between the two alternatives, perhaps making conscious decisions to establish perks and remove or avoid irks contained within the self-employment alternative.

Career Choice as a Utility Maximizing Response – The General Model

The above discussion effectively concerns the individual's choice, at a point in time, between the best-available employment 'job' and the best-available self-employment 'job', as if the outcomes of these were perfectly observable (or observable with known probabilities such that the decision is made in terms of expected values of the variables). But as time passes, prior estimates of incomes, risk, work effort, independence, and net perquisites associated with any job might be revealed to be inaccurate, foreseen jobs may disappear, and job opportunities that were previously not foreseen may reveal themselves. The individual faces a dynamic optimization process, constantly re-evaluating the opportunities available, and potentially switching jobs when a better option arises.

We can model the individual's choice of career path out to the individual's time horizon by defining a career path as a single job held throughout the planning period, or two or more jobs in sequence over that same planning period. Thus we can state:

$$U_{ij} = F\,(Y_{ij}, W_{ij}, R_{ij}, I_{ij}, O_{ij}) \qquad (2)$$

where U_{ij} represents the utility anticipated in the i^{th} period from the j^{th} job;
Y_{ij} represents the income anticipated in the i^{th} period from the j^{th} job;
W_{ij} represents the work effort anticipated in the i^{th} period from the j^{th} job;
R_{ij} represents the risk anticipated in the i^{th} period from the j^{th} job;
I_{ij} represents the independence anticipated in the i^{th} period from the j^{th} job;
O_{ij} represents the other working conditions (or net perquisites) anticipated in the i^{th} period from the j^{th} job;
$i = 1, 2, 3, \ldots n$ represents the different periods (perhaps years) out to the time horizon (n), and
$j = 1, 2, 3, \ldots m$ represents the different jobs available in any period. Note that the individual may have a different job (j-value) in each period, or may persist in the same job for several or all periods.

Now, the individual will envision $k = 1, 2, 3, \ldots z$ career paths, each comprising a single job or a sequence of jobs from the present moment out to the time horizon. The individual will choose among the 'z' career paths, such that his/her expected utility is maximized. The utility

expected from the k^{th} career path can be expressed in general terms as a function of the income stream, the total output of work effort, the total exposure to risks, the total independence provided, and net perquisites associated with each job in each period, out to the time horizon as follows:

$$\Sigma U_{ij} = F\ (\Sigma Y_{ij}, \Sigma W_{ij}, \Sigma R_{ij}, \Sigma I_{ij}, \Sigma O_{ij}) \qquad (3)$$

This notation is correct for the simple case where the individual holds the same job (j-value) in all time periods. He/she would scan all occupational opportunities and choose the j-valued job with the maximal total utility according to Eq. (3). In the more general case, where the individual may move to new jobs in succeeding periods, and thus consider a perhaps infinite set of career paths (job combinations) the notation is more complex, and is unnecessary here. A simple example of a multi-job career path is illustrated in Table 1, where five periods and three different jobs are envisaged. We suppose that this person intends to work for an employer for a couple of years (job 1), then act as a consultant for a year (job 2), and finally start their own business (job 3). The shaded cells indicate the particular career path that we suppose promises that individual more utility than any other career path available at the time.[19]

[Insert Table 1 about here]

Of course some jobs may not be available (at all, or to a particular individual) in every period. If a particular job is envisioned but its point of availability is uncertain, it might be represented at successively later points on several otherwise identical career paths. The individual might choose to stay with the preceding job (common to each of this subset of career paths) for one or more periods until the preferred job becomes available, or alternatively, may choose to take another job until that one becomes available or until a better option comes along.

[19] Note that Eq. (3) can be interpreted as relating strictly to a single job j, or to a series of jobs with different j numbers, as indicated in Table 1.

Thus, the individual scans his/her job options and takes whatever action is needed each period to maximize utility over the time horizon. Each career change is taken because in prospect it appears to offer the greatest utility to the individual. As time passes and situations unfold, and previously unforeseen job opportunities reveal themselves, the individual may change his/her career path accordingly, such that in prospect, his/her utility is maximized.

IMPLICATIONS OF THE MODEL

Considering the decision to be self-employed as the sum of the utility deriving from five main sources allows us to explain a wide variety of observations concerning entrepreneurship. The main implications of the model are as follows, keeping in mind that each statement below carries the implicit caveat 'other things being equal'.

- While high tolerance of work effort, high tolerance for risk, and a strong preference for independence, each militates in favor of entrepreneurship, none of these attitudes are either necessary or sufficient conditions for entrepreneurship.
- It is conceivable that an individual who is highly averse to work, risk, and independence could earn enough income in a self-employment situation to more than compensate for the disutility of effort, risk, and independence suffered in that business.
- Conversely, a person who is highly tolerant of risk and hard work, and who strongly prefers his/her independence, can be paid enough to 'bribe' him/her to remain in the employment of someone else. Alternatively, or in combination, the employer might allow a high degree of autonomy, and/or an intrapreneurial role within the company, which satisfies his/her desires for independence.
- We can say that a person with above average abilities, high tolerance for risk and work, and a preference for independence, is more likely to want to be self-employed than someone with

lesser abilities, less tolerance for risk and hard work, and weaker preference for independence. Conversely, a person who is highly averse to risk and highly averse to independence is more likely to want to be an employee.

- Our model recognizes that the right opportunity has to be available, as well as the necessary funding, before an individual can actualize his/her intentions. Thus, we need to be clear that an expressed intention to be self-employed may be a medium to longer term intention, rather than an immediate intention. Hence we see (longer term) entrepreneurial 'intenders' working for someone else until they gain more experience and/or more funding, and/or find the 'right' opportunity.
- Individuals who are not highly skilled, and/or are highly work averse, and/or intolerant of control, and/or and highly tolerant of risk, are likely to make 'bad' employees, and are less likely to have good employment offers. Thus, they are more likely to conclude that self-employment is their utility-maximizing career path, and along this path may conclude that their best option is in petty entrepreneurship, including, for example, panhandling. For some, crime (such as burglary or drug dealing) may be the utility-maximizing 'career' alternative.
- Entrepreneurial abilities and attitudes are desirable in all managers/workers, since they increase the firm's profit (and shareholder income). Hence, employee recruiting and selection (whether by old and large firms, or by new and small firms) should include assessment of entrepreneurial abilities and attitudes. Further, employee retention policies should recognize and compensate for entrepreneurial abilities and attitudes, to avoid unprofitable employee turnover. Similarly firms should investigate sharing risk and independence with the employee via incentive contracts that allow both parties to gain.[20]

[20] See Douglas [1989] for the simple analytics of the mutual gains through risk sharing. The argument for gains from independence sharing would proceed similarly.

- Venture capitalists should similarly probe or test for entrepreneurial abilities and attitudes in a more systematic way, before risking their funds.
- Management educators should design degree programs which emphasize the enhancement of 'entrepreneurial' abilities and attitudes in business courses more generally, not just in one or two elective 'entrepreneurship' courses, since managers with entrepreneurial abilities and attitudes will augment the profit of the firm, whether that firm is large or small.

CONCLUSION

While we might expect intending entrepreneurs to be more likely to exhibit better abilities and more positive attitudes towards work, risk, and independence, than would intending employees, it is the combination which is determining, not the presence or absence of any one positive attitude. Conversely, deeply negative attitudes in one of these dimensions, or the coincidence of negative attitudes to both risk bearing and independence, are unlikely to be found among intending entrepreneurs, since this might create a deficit too large for the positive attitudes in the other dimensions to overcome.

We found that the critical issues driving the decision to be an employee, or to make the jump to self-employment, relate to incentive problems within the employment relationship. Since entrepreneurial abilities and attitudes benefit all firms, whether large or small, employers must design incentive contracts that consider the employee's utility across the five main elements considered in this paper, if they are to attract and retain entrepreneurial employees.

Empirical studies which attempt to characterize entrepreneurs in terms of their attitudes to work, risk, and independence may expect to find relatively low explanatory and predictive power, unless they also measure the degree of the individual's preference or aversion in each of these dimensions. They should also attempt to measure the abilities of the individuals, since this

will have a positive impact on the desirability of self-employment. Finally, the remuneration of the employee, including the bonus share, and the degree of decision-making independence ceded to the individual in the employment situation, are each relevant issues in the choice whether or not to become an entrepreneur.

There remains much scope for further research. Researchers might attempt to design testing instruments that accurately measure the degree of preference or aversion for income, work, risk, and independence. Given this, the intention of the individual to become either employed or self-employed might be predicted with greater accuracy. Apparent anomalies may be explained by inordinate degrees of preference in one or more dimensions despite negative attitudes to work, risk, and/or independence.

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Table 1: Example of a Career Path (Shaded Series of Jobs).

	Job 1	Job 2	Job 3
Period 1	$Y_{11}, W_{11}, R_{11}, I_{11}, O_{11}$	$Y_{12}, W_{12}, R_{12}, I_{12}, O_{12}$	$Y_{13}, W_{13}, R_{13}, I_{13}, O_{13}$
Period 2	$Y_{21}, W_{21}, R_{21}, I_{21}, O_{21}$	$Y_{22}, W_{22}, R_{22}, I_{22}, O_{22}$	$Y_{23}, W_{23}, R_{23}, I_{23}, O_{23}$
Period 3	$Y_{31}, W_{31}, R_{31}, I_{31}, O_{31}$	$Y_{32}, W_{32}, R_{32}, I_{32}, O_{32}$	$Y_{33}, W_{33}, R_{33}, I_{33}, O_{33}$
Period 4	$Y_{41}, W_{41}, R_{41}, I_{41}, O_{41}$	$Y_{42}, W_{42}, R_{42}, I_{42}, O_{42}$	$Y_{43}, W_{43}, R_{43}, I_{43}, O_{43}$
Period 5	$Y_{51}, W_{51}, R_{51}, I_{51}, O_{51}$	$Y_{52}, W_{52}, R_{52}, I_{52}, O_{52}$	$Y_{53}, W_{53}, R_{53}, I_{53}, O_{53}$