

Does it Pay to be a Jack of all Trades?

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Human capital investment theory suggests that entrepreneurs should be generalists, while those who work for others should be specialists; it also predicts higher incomes for entrepreneurs with generalist skills. An alternative view predicts that those with an increased taste for variety are more likely to become entrepreneurs and that entrepreneurs will see their incomes decrease with greater skill variety. Data from a survey of 830 independent inventors and 300 individuals from the general population confirm that inventor-entrepreneurs typically have a more varied labor market experience. However, the more varied their experience, the lower their household income. Results support the interpretation that both choice of entrepreneurship and investment in generalist skills are driven by a taste for variety.

JEL Classification Codes: J24, L26.

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1. Introduction

In his famous study of Tolstoy's philosophy of history, Berlin (1953) recalls a line from the Greek poet Archilochus that says "the fox knows many things, but the hedgehog knows one big thing." Originally intended as a way to characterize the different ways that writers interpret the world around them, the notion was loosely adapted for business by Collins (2002, p. 91), who argues that those who build "good-to-great" companies are hedgehogs, who "have a piercing insight that allows them to see through complexity and discern underlying patterns. Hedgehogs see what is essential, and ignore the rest." In contrast, those whose businesses fail are foxes — "scattered, diffused, and inconsistent."

In a recent paper, Lazear (2005) proposes a countervailing theory in which it is valuable for an entrepreneur to be a "jack of all trades". At heart, the theory posits that entrepreneurs should be generalists, while those who work for others should be specialists. Even when entrepreneurs can hire others, they "must be sufficiently well versed in a variety of fields to judge the quality of applicants" (p. 650). Individuals may become entrepreneurs because they are innately able in a variety of tasks, or as a result of purposive investment in human capital that is more diverse than individuals intending to become specialists. Work histories and university transcripts of Stanford MBA alumni provide support for the theory. Stanford alumni who are entrepreneurs had studied a more diversified MBA curriculum than those who work for others, and they had a greater variety of roles in the labor market prior to becoming an entrepreneur. Wagner (2003) notes that the Stanford alumni are hardly representative of any national labor force, but is able to show that diversity of roles in the labor market is a predictor of self-employment in a large random sample of the German labor force.¹

Lazear's theory also contains some distinctive predictions about the earnings of entrepreneurs and specialists. First, the theory predicts that although entrepreneurs have higher average

¹ Silva (2007) studies the effect of curriculum balance on entrepreneurial choices of graduates of Bocconi University, finding in cross-sectional analysis that individuals who followed a balanced curriculum were more likely to become entrepreneurs. This result was not robust to panel techniques, and Silva interprets the cross sectional results as the consequence of selection on unobservables. It appears equally plausible, however, that the lack of robustness is driven by the use of weak instruments. Silva also analyses data from the Longitudinal Survey of Italian Families. In cross sectional analysis he finds that the number of prior roles held by an individual is positively associated with the likelihood of becoming an entrepreneur. Again, the finding is not robust to panel techniques.

ability, they earn less than specialists on average because they are not especially good at any one thing. Second, among entrepreneurs earnings are higher for those with more balanced skills, while balance does not matter for specialists. Although the first prediction is consistent with evidence that the returns to entrepreneurship are strongly negative [Hamilton (2000), Åstebro (2003)], the earnings implications of Lazear's theory remain unexplored.

This paper presents an examination of Lazear's theory using a sample of 830 Canadian independent inventors (i.e. those that commercialize their inventions outside the confines of established organizations) and a comparable sample of 300 individuals from the general population. Seventy percent of the inventor sample had at some time owned a business, while 43 percent of the general population sample had done so. Not surprisingly, independent inventors are much more likely to be entrepreneurs than even an otherwise comparable group in the general population. But we also conjecture that among entrepreneurs, independent inventors are particularly likely to benefit from diverse experience, because the commercialization process entails a wide variety of tasks, each one critical for successful commercialization.

We show first that, consistent with the theory, the number of different professions or industries in which a person had worked is positively correlated with the odds that he or she had ever owned a business, and the number of business owned. These correlations survive the inclusion of controls for education, work experience, family business background and marital status. Expanding on previous work, we also examine the effect of skill variety on the likelihood that an inventor succeeds in commercializing his or her invention. We find that the number of occupational categories in which a person had worked raises the likelihood of successful commercialization, but the number of industries in which a person had worked reduces it.

We then turn to an examination of the relationship between earnings, employment choice and skill variety. Consistent with the theory, we find that individuals with a history of entrepreneurial activity earn less than those without. However, we find evidence of negative returns to skill diversity for all types of workers. Among individuals that had owned at least one business at some time during their career, changing professions five or more times is associated with an eleven percent decline in annual household income relative to comparable individuals that had specialized in one profession. Changing industry of employment five or more times is associated with an eight percent decline in relative income. Comparably diverse

industry experience is also associated with a large decline in relative income among non-entrepreneurs, of about 15 percent relative to those having remained employed in a single industry.

To make sense of these diverse results, we develop a model in which a version of Lazear's theory is embedded in a taste structure in which some individuals exhibit greater taste for variety in their work experiences. Individuals with a taste for variety have a preference for entrepreneurial activities because by definition they are more varied occupations than those filled by specialists. When employed as specialists, these individuals satisfy their taste for variety by frequently switching employment. Individuals with the strongest preference for variety switch industries most often and are most likely to become entrepreneurs, even though on average they will be less successful as entrepreneurs and specialists.

We are certainly not the first to suggest that a taste for variety is a major factor in the choice to become an entrepreneur. Hamilton (2000) for example, concludes that lower earnings of entrepreneurs cannot be explained by the selection of the less able into self-employment, and concludes that entrepreneurship offers significant non-pecuniary benefits. While Frey and Benz (2002) conclude from survey evidence that a significant part of the non-pecuniary benefits is simply satisfaction gained from being one's own boss, earlier evidence suggests that variety is in itself rewarding. Ghiselli (1974), for example, discusses taste for job change, a phenomenon he creatively labeled the "hobo syndrome."² Linking the hobo syndrome to entrepreneurial choice, Hyytinen and Ilmakunnas (2004) report that more varied job experience is associated with both greater entrepreneurial aspirations and stronger job-switching intentions. Psychologists have also provided evidence of differing predispositions towards job changes and job satisfaction levels, indicating that some people get bored at work more easily than others [e.g., Judge, Heller, and Mount (2002)].

Our survey data provides an unusual opportunity to test directly the role of taste for variety. We collected data on several individual-level traits that are likely related to a taste for variety, and used these as predictors of the choice of entrepreneurship, choice of professional and industrial experience variety and household income. The variables indeed jointly predicted both occupational choices and household income.

² Givon (1981) discusses a similar phenomenon among consumers switching brands. McAlister and Pessemier (1982) review the extensive literature on taste for variety among consumers.

The remainder of the paper is structured as follows. Section 2 outlines the main predictions of interest in Lazear's model. Section 3 describes our data. Section 4 provides the results of our tests of the Lazear's predictions. Section 5 presents a model incorporating taste for variety, while Section 6 reports our tests of that model. Section 7 concludes.

2. Lazear's Theory

Suppose individuals have skill levels, x and y in two activities. Employees specialize in one of them and earn

$$w_s = \max[x, y], \quad (1)$$

while entrepreneurs must engage in both activities, earning

$$w_E = \lambda \min[x, y]. \quad (2)$$

Lazear calls λ the premium to entrepreneurship (p. 659) although, as we shall see, it is not equivalent to an earnings premium. It is determined endogenously by the demand for entrepreneurs, and must always exceed unity if any individual is to become an entrepreneur. As Figure 1 indicates, for any given λ , individuals with sufficiently balanced skills choose to become entrepreneurs, while those that are much better at one activity than another become specialists. Lazear tests this prediction in a sample of Stanford MBA graduates, using the variety of professional experience and the variety of fields studied while at Stanford as a proxy for the degree to which individuals' skills are balanced. He finds that a one standard deviation increase in the number of prior professional roles is associated with a 25 percent increase in the probability the individual is an entrepreneur. Alumni that had studied a more balanced curriculum were also more likely to start a business and, among all entrepreneurs, were likely to have started more businesses. Wagner (2005) uses a survey conducted in 1998-9 on a 0.1 percent random sample of the working population of Germany, measuring the balance of skills through the number of changes of professions, and the number of different kinds of post-secondary training and education received. He finds that self-employed workers are thirty percent more likely than employees to have changed professions at least once, 33 percent more likely to have changed professions more than once, and received on average seventeen percent more types of post-secondary training.

Lazear's theory has some distinctive implications for earnings, but neither Lazear nor Wagner

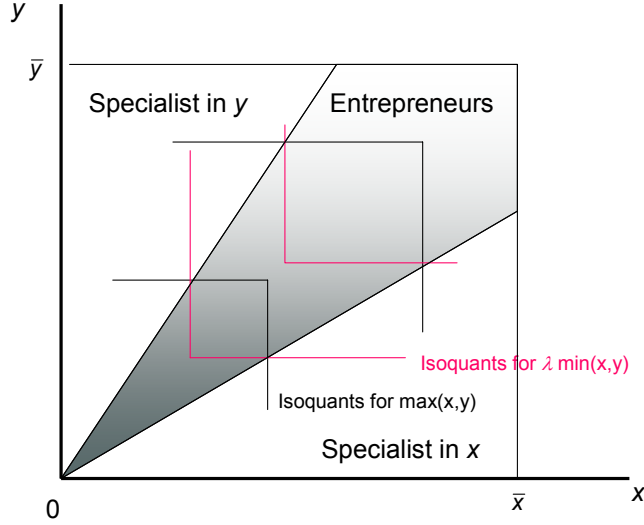


FIGURE 1. Entrepreneurs and specialists in Lazear's model.

were able to test these. While entrepreneurs are likely to be drawn from higher in the ability distribution, in the sense that the average skill across the two tasks is higher, they do not on average earn more. To see this, consider Figure 2. To keep the exposition simple, assume that an individual's skills are independent random draws from the standard uniform distribution, so that an individual may be located at any point in the unit square with equal probability. Then it is easy to see as a simple matter of geometry that the ratio of entrepreneurs with above-average ability (i.e. those above the diagonal) to those with below-average ability, given by the ratio of the areas E and F, exceeds one, while the corresponding ratio for specialists, $(\mathbf{A}+\mathbf{B})/(\mathbf{C}+\mathbf{D})$, is less than one. More formally, let μ be the exogenous relative demand for entrepreneurs, and let $\theta_{(1)} = \min[x, y]$ and $\theta_{(2)} = \max[x, y]$ denote the order statistics. The joint density of $\{\theta_{(1)}, \theta_{(2)}\}$ is the constant 2, defined over $\theta_{(1)} \in [0, \theta_{(2)}]$ and $\theta_{(2)} \in [0, 1]$. The fraction of the population that becomes entrepreneurs then satisfies

$$\mu = \int_0^1 \int_{\theta_{(2)}/\lambda}^{\theta_{(2)}} 2 d\theta_{(1)} d\theta_{(2)} = \frac{\lambda - 1}{\lambda}, \quad (3)$$

so the premium to entrepreneurship is $\lambda = 1/(1 - \mu)$. The average ability of entrepreneurs is therefore

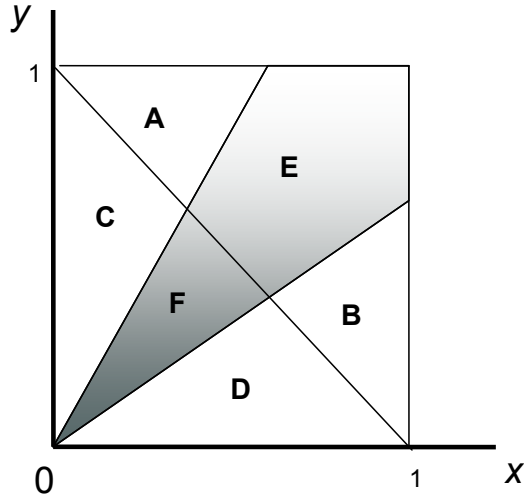


FIGURE 2. The quality of entrepreneurs and specialists.

$$E_E \left[\frac{x+y}{2} \right] = \frac{1}{\mu} \int_0^1 \int_{(1-\mu)\theta_{(2)}}^{\theta_{(2)}} (\theta_{(1)} + \theta_{(2)}) d\theta_{(1)} d\theta_{(2)} = \frac{4-\mu}{6}, \quad (4)$$

which exceeds the average ability of specialists

$$E_S \left[\frac{x+y}{2} \right] = \frac{1}{1-\mu} \int_0^1 \int_0^{(1-\mu)\theta_{(2)}} (\theta_{(1)} + \theta_{(2)}) d\theta_{(1)} d\theta_{(2)} = \frac{3-\mu}{6}. \quad (5)$$

However, the expected earnings of entrepreneurs are

$$E[w_E] = \frac{1}{\mu} \int_0^1 \int_{(1-\mu)\theta_{(2)}}^{\theta_{(2)}} 2\theta_{(1)} d\theta_{(1)} d\theta_{(2)} = \frac{2-\mu}{3}, \quad (6)$$

which is less than the expected earnings of specialists,

$$E[w_S] = \frac{1}{1-\mu} \int_0^1 \int_0^{(1-\mu)\theta_{(2)}} 2\theta_{(2)} d\theta_{(1)} d\theta_{(2)} = \frac{2}{3}. \quad (7)$$

Thus, Lazear's model predicts that although entrepreneurs have higher average ability, they earn less because they are not especially good at any one thing.

A second distinctive implication of the theory is that among entrepreneurs earnings are higher for those with more balanced skills, while balance does not matter for specialists. The claim is intuitive, and it is easily shown. We measure the balance of skills by the statistical range, $\theta_{(2)} - \theta_{(1)}$. Rewrite (6) as

$$E[w_E] = \frac{1}{\beta(\mu-1)+1} \int_0^1 \int_{\beta(1-\mu)\theta_{(2)}}^{\theta_{(2)}} 2\theta_{(1)} d\theta_{(1)} d\theta_{(2)}. \quad (8)$$

For $\beta \in [1, 1/(1-\mu)]$, any increase in β implies that we are averaging earnings over entrepreneurs with a smaller statistical range. Differentiating (8) yields $dE[w_E]/d\beta = (1-\mu)/3 > 0$, thus confirming that balanced skills raise average wages for entrepreneurs. For specialists, rewrite (7) as

$$E[w_S] = \frac{1}{1-\mu-\beta} \int_0^1 \int_{\beta\theta_{(2)}}^{(1-\mu)\theta_{(2)}} 2\theta_{(2)} d\theta_{(1)} d\theta_{(2)}, \quad (9)$$

so any increase in β over the range $\beta \in [0, (1-\mu)]$ implies averaging over specialists with a smaller statistical range. Equation (9) evaluates to $E[w_S] = 2/3$ regardless of the value of β , confirming the second claim.

3. Data and Methods

We wanted to examine a sample of individuals who would clearly benefit from a greater diversity of skills. In situations where entrepreneurs need a limited set of specialized skills, the theory's predictions, while still applicable, might be difficult to detect. This might apply to start-ups that begin large and with a high division of labor, to skilled trades (e.g., plumbing), and to instances in which the definition of entrepreneurship includes consulting or other spot-contracting work. To eliminate such concerns, we examine a sample of independent inventors; that is, individuals who develop intellectual property outside their regular employment duties. While many inventors may not have great entrepreneurial skills, Lazear's theory posits that those who do are more likely to own businesses to commercialize their inventions, and are more likely to succeed. It is also important for testing that inventors are usually unable to specialize in the invention process by licensing or selling their invention to others. In our sample, only 0.6 percent of the independent inventors commercialized their inventions in this manner.

It is costly, given their scarcity, to find independent inventors among the general population. To economize on the search costs, we used a list of independent inventors, self-identified through their use of the services of the Canadian Innovation Centre (CIC). Our sample frame consists of 5,008 inventors that had asked the CIC to evaluate their inventions between 1994 and 2001. Of these 5,008, we had current addresses for 1,770 and contacted them by surface mail. We were then able to contact 934 by telephone, and from these we completed 830 surveys.

Findings from a survey of 300 Canadians provided comparisons to this pool of inventors. The survey, which queried a selected sample of Canadians based on province, work experience, and gender, was designed to reflect similarities with the inventors on these variables. The sample frame consisted of a set of random telephone numbers, stratified by province. We sorted the sample by province and set quotas by province, gender, and work experience. Because the matched sample does not represent the general population, we can not use the sampling method to test predictions regarding the income distribution of entrepreneurs in the general population. However, the sampling scheme involved selection on exogenous variables and allows us to make valid inferences about conditional population densities. The sample is cross-sectional and does not reveal the time paths of employment histories. Our analysis therefore includes a range of tests to alleviate concerns about unobserved heterogeneity and self-selection. Income figures refer to household earnings in 2004. Variables such as employment history, age, and education are also recorded as of 2004, while variables describing the focal invention span the period between 1994 and 2004.

All data are self-reported. We used list-wise deletion to remove 53 observations with missing data on self-employment, 25 observations with missing data on business ownership and 23 observations with missing data on occupational variety, and 5 inventions that were licensed, leaving 1,029 observations for analysis (735 inventors and 294 matched observations). Because household income data were missing for an additional 26 percent of the sample, they must be treated with greater care. When we analyzed household income, the estimates are conditioned on list-wise deletion when household income is missing. As a robustness check, we also imputed values for item non-responses on household income, using a recently developed Bayesian multinomial data imputation method [Chen and Åstebro (2003)] assuming data are missing completely at random. Results reported in later sections of the paper are those obtained using list-wise deletion, but they are consistent with those using this

alternate method.³ For all other regressors the non-response rate was below two percent and so results are likely to be insensitive to how we treat these missing observations. In these cases, we imputed missing values by standard techniques under the assumption that they are missing at random. List-wise deletion produced results similar to those reported here.

Table 1 provides some demographic statistics for the two samples. The sample is 91 percent male and 89 percent married. Household income, which was self-reported, uses ranges. Twenty-eight percent of the sample reported an income exceeding \$100,000, rather more than the sixteen percent reported in the Canadian census of 2000 [Statistics Canada (2004)]. The median range in the sample is \$70,000 to \$100,000, which is also substantially higher than the national median in 2000 of \$55,000. These differences are not surprising, in view of the self-selection of the inventor sample, and the fact that the inventor sample is rather older than the Canadian labor force as a whole. In both samples, the modal educational attainment is high school, although about 25 percent of both samples had some professional or graduate education. The inventor and general population samples are well matched on gender, marital status, education, and income, but the general population sample is somewhat younger. The inventors are somewhat more likely to have a higher education. Inventors are no different than the general population when it comes to programs studied at college or university.

Table 2 provides some summary statistics about invention. While the identification of inventors relies on a specific, focal, invention submitted to the CIC for review it does not imply that the individuals are predominantly one-shot inventors. To the contrary, the sample is dominated by long-term serial inventors. Fifty-three percent of them had spent six or more years developing inventions, and 76 percent had worked on more than one invention. Interestingly, but perhaps implausibly, almost four percent claimed to have worked on more than 100 inventions in their life-time. The median focal invention development effort was performed in 1997, and 95 percent of respondents had attempted to develop their invention before 2003.⁴

³ We generated nine complete datasets where missing data were replaced under the assumption that data were missing completely at random, and conditional on observed data. Coefficients, standard errors, and degrees of freedom were computed over nine samples according to Little and Rubin (1987), equations 12.17 to 12.20. The results are available from the authors.

⁴ Since most inventions are minor, and the time between development efforts for the focal invention and recording of household income is moderate, we may not detect much impact on household income

TABLE 1
Summary Statistics: Demographic Variables

	No. of Observations	No. Imputed	Fractions			<i>t</i> statistic
			Total	Inventors	General Population	
MALE	1,029	0	0.91	0.91	0.91	0.00
MARRIED	1,029	16	0.89	0.89	0.88	0.86
INCOME	776	0				
< \$30,000			0.13	0.12	0.14	-0.85
\$30,000 - \$50,000			0.18	0.17	0.20	-1.12
\$50,000 - \$70,000			0.19	0.21	0.16	0.14
\$70,000 - \$100,000			0.23	0.23	0.23	0.14
> \$100,000			0.28	0.28	0.27	
AGE	1,029	18				
< 35			0.11	0.05	0.28	-8.67
35 - 44			0.32	0.30	0.35	-1.48
45 - 54			0.33	0.36	0.19	6.22
≥ 55			0.25	0.30	0.18	3.85
WORK EXPERIENCE	1029	4				
< 9 years			0.02	0.02	0.05	-2.76
10 - 19 years			0.13	0.13	0.13	0.14
≥ 20 years			0.85	0.85	0.82	1.57
EDUCATION	1,029	3				
High school			0.27	0.25	0.31	-1.81
Trade school			0.14	0.14	0.13	0.63
Some college			0.17	0.16	0.18	-0.70
College degree			0.17	0.18	0.14	1.57
Professional degree			0.13	0.15	0.09	2.78
Graduate studies			0.12	0.11	0.15	1.76
Arts or social science	430		0.49	0.51	0.45	1.04
Science or engineering			0.33	0.34	0.29	0.99
Business degree			0.17	0.16	0.20	-0.89

t-statistics test for significant differences between inventor and general population samples.

from the focal invention. However, as we identify mostly serial inventors it is likely that any income effects of being a long-term inventor will be detectable in this sample.

Successful commercialization was assessed through the telephone survey, which defined the outcome variable as unity if the invention reviewed by the CIC was commercialized and as zero otherwise. Follow-up questions with respect to how the invention was commercialized and the presence of revenues allowed us to verify an affirmative response as valid. Almost eleven percent of the respondents reported commercializing their invention and obtaining revenues. This fraction is reasonably close to the range of five to eight percent previously estimated on a different sample of independent inventors [Åstebro and Bernhardt (1999)]. Ninety-four percent of the inventors are “voluntary” in the sense that only six percent of them reported they were unemployed, disabled, or on sick leave during the time that they were developing their focal invention.

TABLE 2
Summary Statistics: Invention Variables (inventor sample only)

	No. of Observations	No. Imputed	Fraction
TIME DEVELOPING INVENTIONS	735	15	
< 1 year			0.19
1 – 2 years			0.10
3 – 5 years			0.16
> 5 years			0.53
NUMBER OF INVENTIONS	735	0	
1			0.24
> 1			0.76
CIC rated quality as high	735	21	0.22
Unemployed, disabled, or sick when inventing	735	0	0.06
Formed team to commercialize invention	735	0	0.21
Successfully commercialized	732	0	0.11

Disputes sometimes arise regarding the measurement of entrepreneurship. Because of data availability, self-employment is the measure most widely used, although business ownership is also used. Some investigators, including Lazear (2005), argue that it is more appropriate to

analyze the creation of new businesses. For reasons of completeness and to allow comparisons to be made, we examined all three measures. Table 3 summarizes. Sixty-three percent of our pooled sample of inventors and general population had been self-employed at some point, and about sixty percent had owned at least one business. This fraction of current and former business owners is much larger than in Lazear's (2005) sample of Stanford MBAs, of whom 24 percent had started at least one business over their lifetime. Among the inventors, the mean number of businesses owned is 1.50, while the chance of having been self-employed is seventy percent. In contrast, for the matched set from the general population, the average number of businesses owned is 0.70, and the chance of having been self-employed is 43 percent. Note that many inventors were entrepreneurs before trying to commercialize their inventions and that others became entrepreneurs in an attempt to commercialize them.

TABLE 3
Summary Statistics: Employment and Entrepreneurship Variables

	No. of Obs.	No. Imputed	Fractions			<i>t</i> statistic
			Total	Inventors	General Pop.	
ENTREPRENEURSHIP						
Ever been self employed	1,029	0	0.63	0.70	0.43	8.18
No. of businesses owned	1,029	0	1.28 ^a	1.50	0.70	8.10
Entrepreneurial family ^b	1,029	0	0.53	0.55	0.47	2.58
OCCUPATIONAL FIELDS						
	1,029	20				
1			0.12	0.11	0.16	-2.17
2 or 3			0.38	0.38	0.39	-0.44
4 or 5			0.27	0.26	0.28	-0.77
> 5			0.23	0.25	0.16	3.33
INDUSTRIES WORKED IN						
	1,029	7				
1			0.18	0.16	0.25	-3.04
2 or 3			0.38	0.39	0.41	-0.38
4 or 5			0.23	0.27	0.20	2.44
6 to 10			0.11	0.12	0.10	1.06
> 10			0.05	0.06	0.04	1.28

^a Standard deviation 1.88. ^b Fractions of respondents that their family had at some time owned a business. *t*-statistics test for significant differences between inventor and general population samples.

To assess variety in occupational experience, we asked respondents: “How many different occupational fields of experience have you been active in? Accounting, farming, marketing, and plumbing would be examples. We are interested not in the number of specific jobs you have had but the number of past and present occupational fields of experience.”⁵ We also asked how many distinct industries they had worked in. Thirty-three percent have worked in five or more occupational fields, the median being three fields. Fifty-six percent have worked in three industries or fewer, while five percent have worked in more than ten. Inventors reported more varied work experience than did respondents from the general population, measured both by the number of occupational fields and the number of industries in which they had worked.

4. Tests of the Lazear Model

In this section, we report tests of the implications of Lazear’s model outlined in Section 2. Section 4.1 examines the effect of variety in labor market experiences on entrepreneurship, Section 4.2 examines whether variety influences the rate of commercialization of inventions, and Section 4.3 examines the effect of variety on earnings.

4.1 *Variety and Entrepreneurship*

Raw differences in the numbers of occupational fields and industries worked in by respondents that have owned businesses and those that have not are clearly evident in Figures 3 and 4. These raw differences survive in formal analysis. Columns 1 and 2 of Table 4 report the results of logit regressions in which the dependent variables equal one if the respondent had ever been self-employed or had ever owned a business. Column 3 reports the results of a negative binomial regression in which the dependent variable is the number of business owned. In addition to measures of variety, the regressions include controls for family entrepreneurship, education and work experience. Education and work experience were reported in categories in the survey, but for ease of presentation these were transformed into years of education and years of work experience. Only linear effects are estimated as quadratic terms were not significant. Results using the ordinal categories are consistent with

⁵ This question, except for the examples, is identical in wording to the question asked by Wagner (2003). We added the examples to clarify the question for the respondent.

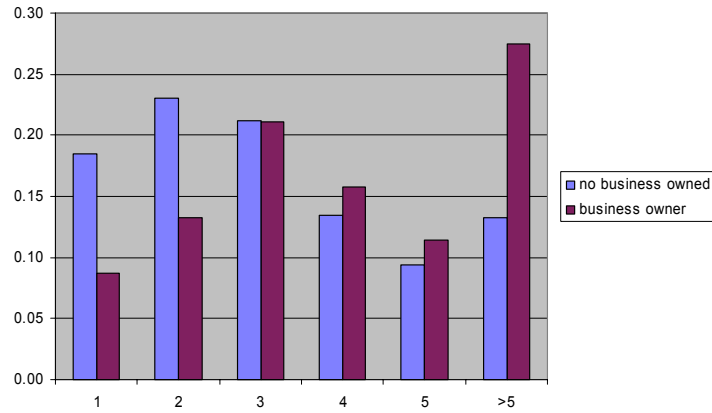


FIGURE 3. Number of occupational fields.

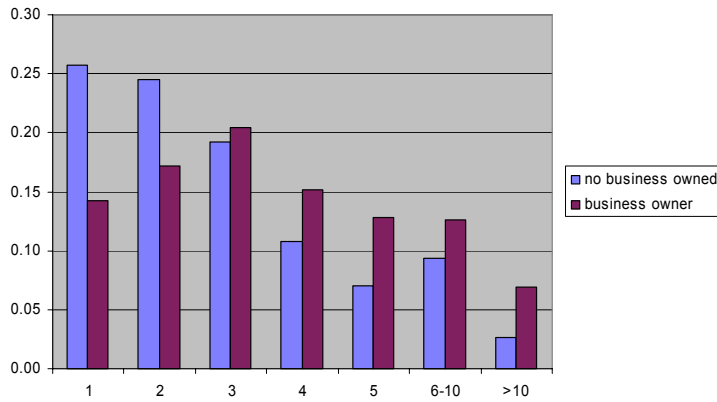


FIGURE 4. Number of industries worked in.

those presented here.

The key results in Table 4 are consistent with Lazear's theory. Respondents with an entrepreneurial background have had a more varied labor market experience than those without. Individuals who have worked in six or more occupational fields, are more than twice as likely to have been self-employed or to have owned at least one business than are individuals who have worked in only one field. Similarly, respondents reporting working in four or more industries are also twice as likely to be entrepreneurial. Variety in occupational field and industry of employment also are positively associated with the number of business owned. These effects are highly significant. For example, a Wald test that the four variety indicators in column 1 equal zero is strongly rejected ($F=40.22$, $p<0.001$). Note also that

inventors have odds of being entrepreneurial two to three times greater than non-inventors, while individuals with family members that have operated a business are twice as likely to be entrepreneurial as those that do not.

TABLE 4
Variety and Entrepreneurship

	LOGIT (ODDS RATIOS)		NEGATIVE BINOMIAL
	Prob (ever self-employed)	Prob (ever a business owner)	No. of businesses owned
	(1)	(2)	(3)
Occupational fields 2 to 5	1.27 (0.28)	1.52* (0.34)	0.35*** (0.13)
Occupational fields \geq 6	2.23*** (0.61)	2.89*** (0.78)	0.72*** (0.23)
Worked in 4 or 5 industries	1.76*** (0.31)	1.74*** (0.30)	0.50*** (0.18)
Industries worked in \geq 6	2.08*** (0.48)	1.40 (0.29)	0.54*** (0.15)
Family operated a business = 1	1.98*** (0.28)	2.06*** (0.28)	0.42*** (0.09)
Inventor = 1	2.99*** (0.45)	2.39*** (0.36)	0.55*** (0.09)
Years of schooling	1.03 (0.03)	1.00 (0.03)	0.00 (0.03)
Years work experience	1.09*** (0.03)	1.07*** (0.03)	0.07*** (0.02)
Married = 1	0.93 (0.20)	0.89 (0.19)	-0.12 (0.14)
Average Log-likelihood	-0.58	-0.60	-1.42
Pseudo R^2	0.12	0.10	0.06

Standard errors in parentheses are heteroskedastic-consistent using White's (1980) formula. Significance levels: *** 0.01, ** 0.05, * 0.10.

4.2 *Variety and the Commercialization of Inventions*

Expanding on previous work, we examine in this subsection the effect of variety on the probability that an inventor is able to commercialize his or her invention. In many instances, such as with skilled trades, farming, fishing, or part-time consulting, self-employment may have little to do with entrepreneurial actions. In contrast, bringing an invention to market likely demands many types of explicitly entrepreneurial tasks, including product development, business planning, raising capital, negotiating with suppliers and distributors, marketing, and setting up production. Our hope in studying the commercialization of inventions was therefore that more detailed information would be revealed about the choice to become an entrepreneur.

Column 1 of Table 5 contains estimates of the odds of invention commercialization, using a maximum likelihood logistic model. The sample used in the regressions is restricted to inventors, of whom eleven percent were able to commercialize their inventions. We used five controls for inventor and invention characteristics: voluntary inventor, total years of inventive efforts, number of life-time inventions worked on, teamwork to commercialize focal invention and quality of focal invention. Total years of inventive efforts and number of life-time inventions worked on are highly correlated so the reported regressions include only the former variable. The quality of the invention was judged by experts at the CIC at an early stage of the invention's development and this judgment has been found to be highly predictive of future commercialization [Åstebro and Elhedhli (2006)].

The results show that the odds of commercialization increase with the number of occupational fields, while rather surprisingly they decrease for the number of industries worked in. Having experience in six or more different occupations increases the odds approximately threefold compared with having experience in one occupation. However, having worked in six or more industries decreases the odds of commercialization by approximately two thirds compared with having worked in five or fewer industries.

Not all inventors have the variety of skills necessary to commercialize their invention themselves, but they may often have few alternatives [Åstebro and Dahlin (2004)]. As a result, many inventors that decide to pursue commercialization try to augment their variety of skills by adding members with supportive skills to the start-up team. Table 5 shows that this strategy is indeed associated with extremely large increases in the odds of successful

TABLE 5
Variety and the Commercialization of Inventions

	LOGIT (ODDS RATIOS)		BIVARIATE PROBIT	
	Prob (commercialization)	Prob (commercialization)	Prob (formed team)	
	(1)	(2)	(3)	
Occupational fields 2 to 5	1.87 (1.09)	0.29 (0.28)	0.16 (0.18)	
Occupational fields ≥ 6	2.89* (1.78)	0.52* (0.30)	0.08 (0.21)	
Worked in 4 or 5 industries	1.11 (0.36)	0.09 (0.17)	-0.08 (0.14)	
Industries worked in ≥ 6	0.29*** (0.13)	-0.64*** (0.24)	-0.08 (0.16)	
Teamwork to commercialize = 1	6.03*** (1.77)	1.35* (0.72)		
Invention quality = high	2.74*** (0.80)	0.48** (0.20)	0.45*** (0.13)	
Correlation between errors, ρ			-0.21 (.41)	
Average Log-likelihood	-0.24		-0.72	
Pseudo R^2	0.23			

$N = 732$. Sample only includes inventors with data on occupational choices. Standard errors in parentheses are heteroskedastic-consistent using White's (1980) formula. Significance levels: *** 0.01, ** 0.05, * 0.10. All regressions include, years of schooling, years of work experience, three categorical variables for years spent developing inventions, and an indicator variables for whether family had ever operated a business, marital status, and whether the inventor was a voluntary inventor.

commercialization. On its face, this result suggests that many successful inventors do not have a broad balance of skills. However, the team variable is likely to be correlated with unobserved characteristics of the invention that influence the likelihood of commercialization. To tackle this kind of endogeneity we use a bivariate probit model with the probability of

commercialization and of teaming up with people as both endogenous. Results are presented in columns 2 and 3 of Table 5. It is clear from the decline in the magnitude of the coefficient on teamwork in column 2, that it is endogenous. Nonetheless, there remains some evidence that forming a team can substitute for inventor skills in the commercialization process.

4.3 *The Returns to Variety*

We now turn to examine the effects of variety in labor market experience on household income. Table 6 reports estimates of household income, first by using interval regression. We present results for which inventors and the matched sample were pooled, and hence omit variables that are observed only for inventors.⁶ Columns 2 and 3 display separate regressions for employed and self-employed.

The main result is that a greater variety of labor market experience reduces household income for both entrepreneurs and employed. Column 1 shows that both the number of occupational fields and the number of industries worked in have large negative coefficients, and a Wald test that the four variety indicators in column 1 are all equal to zero is rejected ($F=11.00$, $p<0.05$). Columns 2 and 3 indicate that employed and self-employed alike have negative returns to skills variety.⁷ The negative effects of variety are of important magnitudes and the four dummies are jointly significant in both equations (column 2: $F=12.83$, $p<0.05$ column 3: $F=11.20$, $p<0.05$). Entrepreneurs changing occupational fields six or more times reduce their expected household income by approximately \$15,700 compared to those specializing in one profession. Similarly, entrepreneurs changing jobs across six or more industries reduce their expected household income by approximately \$6,200 compared to those specializing in one industry.⁸

⁶ These are: “teamwork to commercialize,” “involuntary inventor,” “years of inventive experience” and “invention quality.” We also ran a separate income analysis for the inventor sample. Although the sample size is reduced by about 1/3, results are consistent with those reported in Table 6.

⁷ Results are similar when the sample is separated into business owners and non-business owners or inventors and non-inventors.

⁸ Because of the correlation between our four variety indicators we obtained a principal component from them. The first (principal) component represents 74% of the combined variances. Using this principal component in place of the four indicator variables, leads to an estimated returns to skill variety that is statistically significant at the 5% level, with elasticities of -1.7% and -1.4% for employees and entrepreneurs, respectively

TABLE 6
The Returns to Variety

	INTERVAL REGRESSIONS		
	Dependent Variable: Household Income ('000s)		
		Never self- employed	Self-employed
	(1)	(2)	(3)
Occupational fields 2 to 5	-6.269 (4.39)	-6.46 (5.59)	-8.97 (6.20)
Occupational fields ≥ 6	-8.36 (5.36)	1.72 (7.95)	-15.69** (7.03)
Worked in 4 or 5 industries	-1.67 (3.29)	-9.87* (5.39)	1.05 (4.06)
Industries worked in ≥ 6	-9.79** (4.39)	-22.17*** (4.19)	-6.16 (5.20)
Family ever operated a business =1	6.20** (2.67)	2.97 (4.19)	5.72* (3.46)
Inventor = 1	2.93 (3.09)	3.89 (4.19)	4.20 (5.46)
Years of schooling	5.45*** (0.60)	6.47*** (0.91)	3.88*** (0.82)
Years of work experience	0.24 (0.50)	-0.04 (0.61)	0.56 (0.81)
Married = 1	17.70*** (4.58)	16.17** (6.68)	19.50*** (6.26)
Constant	-27.18* (15.1)	-35.67 (18.9)	-14.24 (23.9)
Average Log-likelihood	-1.74	-1.71	-1.70
<i>N</i>	776	299	477

Sample only includes observations with data on household income and occupational choices. Standard errors in parentheses are heteroskedastic-consistent using White's (1980) formula. Significance levels: *** 0.01, ** 0.05, * 0.10.

4.4 *Summary*

Our analysis has produced strong evidence that individuals with a greater variety of skills are more likely to choose to be entrepreneurs. This finding is consistent with the Lazear model and with previous empirical findings. Among inventors, the relationship between variety and success in commercialization of inventions is mixed. Greater variety in occupational choice raises the probability of commercialization, but greater variety of jobs across industries reduces it. Lazear's model also predicts that greater variety enhances incomes for entrepreneurs, but not for specialist employees. However, we found that greater variety is associated with a lower income, both for the pooled sample and for inventors alone.

Many of these results can be explained by a model in which individuals exhibit varying degrees of preference for variety in life experiences. Individuals with a taste for variety will frequently switch jobs and industries, and are also more likely to choose an entrepreneurial life that itself offers more variety. In order to indulge their taste for variety, they are willing to forego the additional income that consistency of employment provides. It is perhaps less clear why experience in a greater number of occupations raises the odds of commercialization while increased variety in industries of employment reduces the odds. We conjecture, however, that individuals who jump around between industries are exhibiting an especially strong preference for variety. Such a preference may be negatively associated with the sustained efforts that are required to commercialize an invention.

5. A Model of Taste for Variety

In this section we formalize our notion of taste for variety. Individuals who enjoy satisfaction from engaging in varied tasks may choose to become entrepreneurs even if they lack sufficiently varied skills, and they are also likely to switch frequently between occupations. But our results suggest that there is a cost to frequent job-switching. We capture this tension between costs and benefits of job switching by assuming that individuals can raise their productivity at any task through on-the-job learning, but suffer increasing disutility the longer they have been doing the same task. We assume all individuals learn at the same rate, but suffer disutility at different rates that depend on their taste for variety.

To fix ideas in the simplest possible setting, consider first an individual with a work life of one unit of time, whose sole option throughout life is to work as a specialist employee. As

before, there are two specialist tasks, and the individual begins life with innate abilities x and y in these tasks. Abilities are, again, independent random draws from the standard uniform distribution, and we denote the order statistics by $\theta_{(1)} = \min[x, y]$ and $\theta_{(2)} = \max[x, y]$. The individual chooses the time, τ , at which he switches from specializing in one task to the other in order to maximize lifetime utility:

$$\tau = \arg \max \left\{ \int_0^{\tau} (\theta_{(2)} t - vt^2) dt + \int_{\tau}^1 (\theta_{(1)} (t - \tau) - v(t - \tau)^2) dt \right\}. \quad (10)$$

Learning is linear at a unit rate and utility is linear in earnings. Disutility from time spent doing the same task is quadratic, and $v \geq 0$ measures the degree of taste for variety. There is no discounting, so it does not matter what order is chosen for the two tasks. We assume here that the task at which the individual is best is done first (if there were discounting, this would be the optimal choice), which implies that $\tau \geq 1/2$. If $\theta_{(2)} < v$, then $\tau < 1$. Otherwise, $\tau = 1$. For an interior solution, we have

$$\tau = \begin{cases} \frac{v - \theta_{(1)}}{2v - (\theta_{(1)} + \theta_{(2)})}, & \theta_{(2)} < v \\ 1, & \text{otherwise} \end{cases}. \quad (11)$$

The fraction of the population that switch at some point in their lives is simply the fraction for whom $\theta_{(2)} < v$. With $G(v)$ denoting the distribution of v , this is given by

$$\begin{aligned} \Pr\{\theta_{(2)} < v\} &= \int_0^{\infty} \min\{v^2, 1\} dG(v) \\ &= [1 - G(1)] + \int_0^1 v^2 dG(v). \end{aligned} \quad (12)$$

If $v \sim U[0, 1]$, (12) implies that one third of the population would switch occupations at some point; if $v \sim U[0, 2]$, two thirds would switch. But the key point we wish to make is that switching is costly in terms of earnings: our empirical results show that, conditional on work experience, current earnings are on average lower for employees that have switched in the past. Our model predicts this, and also that the difference is larger for older cohorts. The

reasoning is intuitively simple. First, for any pair of order statistics, $\theta_{(1)}$ and $\theta_{(2)}$, and a possible switching time of τ , earnings at age s are $s\theta_{(2)}$ for non-switchers and $(s-\tau)\theta_{(1)}$ for switchers. Second, $\theta_{(2)}$ is stochastically smaller for switchers, so $\theta_{(1)}$ for switchers is also stochastically smaller than $\theta_{(2)}$ for non-switchers. Proving this intuition formally is a tricky proposition, despite the simplicity of the model,⁹ but it is easy to illustrate upon simulating a large sample of individuals. Figure 5 does so for v uniform with three distinct upper bounds, showing that the wage premium for non-switchers is positive and increasing with the work experience of a cohort.

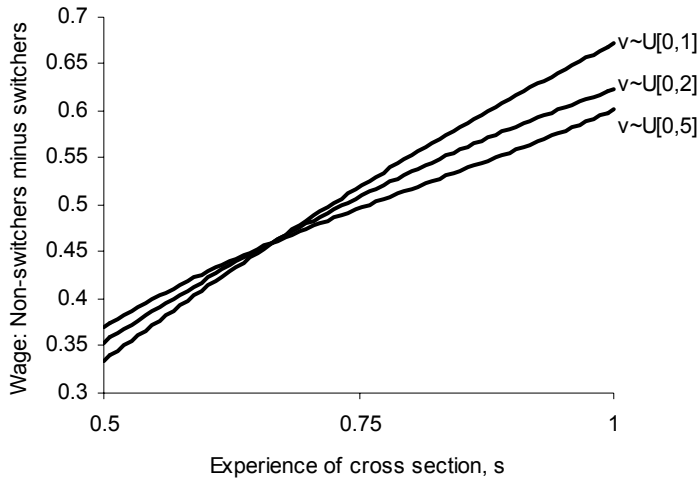


FIGURE 5. Difference between current wage of non-switchers and switchers, by length of work experience.

We have so far said nothing about entrepreneurship. We incorporate this choice into the model now. Assume an individual chooses switching times τ_1 and τ_2 to maximize lifetime utility, given by

⁹ For those who do not switch, the average wage after work experience of length s is given by the conditional expectation $sE[\theta_{(2)} | s\theta_{(2)} > (2s-1)v + (1-s)\theta_{(1)}]$. The lower limit is a linear function of $\theta_{(1)}$, which is not independent of $\theta_{(2)}$. A greater difficulty exists for those who do switch.

$$\begin{aligned}
V(\theta_{(1)}, \theta_{(2)}, v) = & \max_{\tau_1, \tau_2} \int_0^{\tau_1} (\theta_{(2)} t - vt^2) dt + \int_{\tau_1}^{\tau_2} (\theta_{(1)} (t - \tau) - v(t - \tau)^2) dt \\
& + \lambda \int_{\tau_2}^1 \min \left\{ \theta_{(2)} \left(\tau_1 - \frac{(t - \tau_2)}{2} \right), \theta_{(1)} \left((\tau_2 - \tau_1) + \frac{(t - \tau_2)}{2} \right) \right\} dt - cn, \tag{13}
\end{aligned}$$

subject to the constraint that $0 \leq \tau_1 \leq \tau_2 \leq 1$. The third integral is the payoff from spending the interval $[\tau_2, 1]$ as an entrepreneur, during which it is assumed that time is divided equally between the two tasks and that there is no loss of utility from repetition of the same task. In (13), $n = \{0, 1, 2\}$ is the number of times the individual switches occupations. On each occasion he incurs a cost c . The structure of the model allows for a number of sequences of labor market choices, while excluding some others. For parameter values yielding optimal choices satisfying $0 < \tau_1 < \tau_2 < 1$, the individual specializes in each task sequentially before becoming an entrepreneur. If $0 = \tau_1 < \tau_2 < 1$ the individual first gains experience in his weaker skill before becoming an entrepreneur, while if $0 < \tau_1 = \tau_2 < 1$ the individual first specializes in his stronger skill before becoming an entrepreneur. Finally, if $0 = \tau_1 = \tau_2$, the individual is an entrepreneur his entire life.¹⁰

It is easy to obtain the necessary conditions for the optimal switching times, but the expressions are not especially informative and the solutions are often not interior. Consequently, we again resort to a numerical illustration of the model, assuming $v \sim U[0, 1]$. Table 7 summarizes the results from 2,500 random draws of abilities and taste for variety. There were very few instances in which an individual specializes in only one task before becoming an entrepreneur and no instances in which a specialist switched tasks without becoming an entrepreneur. Hence, the tables compares mean earnings at age $s=1$ and the mean values of key parameters for (i) entrepreneurs at age $s=1$ who had held no prior specialist occupations, (ii) entrepreneurs at age $s=1$ who had held at least one prior occupation before switching, and (iii) specialists at age $s=1$.

The key results from the simulation are consistent with intuition. Entrepreneurs have on

¹⁰ Because there is no discounting, the order in which an individual specializes in the two tasks is not important, so excluding the choice to specialize first in the weaker skill implies no loss of generality. In contrast, the constraint that entrepreneurship cannot precede specialization does imply a loss of generality.

average both a stronger taste for variety and a more balanced skill set than do specialists; they earn less on average than specialists, and the loss of earnings is even greater for entrepreneurs who previously worked as specialists. Note that the average value of $\theta_{(1)}$ is considerably larger for individuals who immediately become entrepreneurs than for those who remain as specialists, but it somewhat lower for those who become entrepreneurs after working as specialists. Members of the latter group spend some time prior to becoming an entrepreneur to improve their weakest skill.

TABLE 7
Simulations of (13) evaluated at $s=1$

PANEL A				
<i>Average wage, taste for variety, and skill levels by employment group</i>				
	OVERALL	ENTREPRENEURS		SPECIALISTS
		No prior occupation	Prior occupations	
<i>% of cases:</i>		7.6%	28.7%	63.7%
w	0.55	0.265	0.174	0.756
v	0.50	0.641	0.760	0.364
$\theta_{(1)}$	0.33	0.441	0.290	0.345
$\theta_{(2)}$	0.67	0.476	0.567	0.750

PANEL B				
<i>Selection into entrepreneurship and earnings, by value of weakest skill</i>				
	PERCENTAGE ENTREPRENEURS AT $s=1$	EARNINGS AT $s=1$		
		Entrepreneurs	Specialists	
$\theta_{(1)}$ below median	38.5%	0.071	0.819	
$\theta_{(1)}$ above median	34.2%	0.331	0.688	

Based on 2,500 random draws for v , $\theta_{(1)}$, $\theta_{(2)}$, all from the standard uniform; $\lambda=1.2$, $c=0.01$.

Although taste for variety clearly plays a major role in determining selection into entrepreneurship and consequent earnings, it remains true that conditional on becoming an entrepreneur, earnings are enhanced by being a jack of all trade. Panel B of Table 7 reports average earnings after splitting the sample into those with $\theta_{(1)}$ above and below the median.

Higher values for the weakest skill have a large impact on entrepreneurs earnings, but a more modest impact on specialists earnings.¹¹

6. Direct Tests of Taste for Variety

This section presents the results of some tests of taste for variety. We begin in Section 6.1 by jointly estimating the choice of entrepreneurship, the choice of job variety, and household income, as functions of several variables that we believed might indicate a taste for variety. Section 6.2 considers and rejects an alternative explanation based on unobserved ability that is negatively correlated with increased skills variety.

6.1 *Direct proxies for taste for variety*

We estimate a trivariate probit in which one branch of the decision tree describes the probability of switching into entrepreneurship, the second the probability of seeking variety and the third the probability of having earnings of at least \$70,000. The second branch consisted of the joint probability of working in six or more occupations and four or more industries. We selected this confluence of choices as the tabulations of both distributions indicated clear changes in probabilities at those cutoffs. The third branch is simply a collapsed version of the interval data on household income.

We constructed four variables that we believe relate to a person's taste for variety as well as entry: risk perception, adversity resilience, intrinsic motivation, and opportunity seeking, and one variable that we thought might solely condition entry: optimism. For each construct, respondents were asked the extent to which they agree/disagree with each of several statements on a five-point scale, with one representing strongly disagree and five representing strongly agree. Scores on items were averaged to form a composite measurement. The order of the items was randomized across subjects.

We used a seven-item scale of risk perception that measure willingness to take risks across varying situations and which was derived from the Jackson Personality Inventory [Jackson (1977)]. Dohmen, et al. (2005) demonstrate that such a measure is a good predictor of actual

¹¹ The fact that average earnings for specialists are also increasing in the value of $\theta_{(1)}$ should not be surprising, as $\theta_{(1)}$ and $\theta_{(2)}$ are not independent.

risky choices where real money is at stake, and that it is good predictor of risk-seeking behaviors in decisions such as financial, health, occupational choice, participation in sports, and traffic violations.¹²

Adversity resilience is a concept describing the ability of an individual to cope with everyday adversities. The scale was based on four items, one example being “People respond very unfavorably to my ideas” [Markman, Baron, and Balkin (2005)]. To measure optimism we chose six optimism items from the International Personality Item Pool personal attributes survey [Scheier, Craver and Bridges (1994), Oregon Research Institute (2001)], an example being “I just know that I will be a success”. We created a seven-item scale measuring the intrinsic motivation to invent. Two examples are: “I invent because I enjoy it” and “I enjoy the feeling of solving problems”. Finally, the opportunity-seeking variable was created using a four-item scale with such statements as “I often find products that I think can be improved upon”. For the empirical estimation we assigned all observations above the median value one and observations below the median the value zero.

These constructed variables represent individual-level differences in tastes rather than choices and typically are unobserved to the econometrician. We expected that individuals who profess to be risk intolerant dislike variety, and those who are better able to cope with adversity are more likely to seek out variety. Optimists may be more likely to enter, but that should not affect the probability of seeking variety. However, those who are intrinsically motivated to invent and who seek out new opportunities may have a taste for variety.

As Table 8 shows, the addition of taste-related variables has mixed results. Nevertheless, a Wald test of joint significance soundly rejects the null that the variables do not jointly affect the choices observed ($F=74.49$, $p<0.001$). Examining them individually, it appears that those who are risk intolerant are less likely to become entrepreneurs, less likely to choose a variety of jobs, and less likely to earn a high income. Those who like to invent appear more likely to become entrepreneurs and those who are adversity-resilient and optimistic are likely to have higher incomes.

¹² A potential drawback is that the measure employed potentially incorporates both risk preference and risk perception. However, in this paper we are interested in any individual-level trait that may explain self-employment choices and so incorporating risk perceptions is advantageous.

TABLE 8
Taste for Variety

Taste proxies	TRIVARIATE PROBIT		
	Prob (self-employed)	Prob (≥ 6 occ. & ≥ 4 ind.)	Prob (income > \$70,000)
	(1)	(2)	(3)
Risk averse = 1	-0.36 ^{***} (0.10)	-0.30 ^{***} (0.10)	-0.27 ^{***} (0.10)
Adversity-resilient = 1	0.02 (0.10)	0.14 (0.10)	0.29 ^{***} (0.10)
Optimist = 1	0.06 (0.10)	-0.15 (0.10)	0.28 ^{**} (0.10)
Intrinsically motivated = 1	0.25 ^{**} (0.10)	0.06 (0.10)	0.04 (0.10)
Opportunity seeker = 1	0.05 (0.10)	0.11 (0.10)	-0.18 [*] (0.10)
Correlations between errors	↑ _____ ↑ 0.03 (0.06)	↑ _____ ↑ -0.01 (0.09)	↑ _____ ↑ 0.11 (0.09)
Average Log-likelihood	-1.80		

$N = 776$. Standard errors in parentheses are heteroskedastic-consistent using White's (1980) formula. Significance levels: *** 0.01, ** 0.05, * 0.10. All columns include years of schooling, years of work experience, and an indicator variables for whether family had ever operated a business, and marital status. Columns (1) and (3) further include the four employment variety indicator variables.

6.3 Unobserved Ability

An alternative explanation for the results presented in Section 4 is that unobserved ability is negatively correlated with increased skills variety. Assume high-ability individuals are paid well and stay, while low-ability individuals are paid less and leave. Thus those who switch

jobs more often are more likely to be of lower quality; more likely to switch into entrepreneurship, perhaps by chance; and more likely, by chance, to switch both across different professions and different industries. There is indeed empirical evidence showing that individuals who change jobs more often are both more likely to become self-employed and to earn less in self-employment [Evans and Leighton (1989)].

If this alternative explanation is correct, those who switch into entrepreneurship at some point in time should have unobserved ability that is lower than those that do not; moreover, this unobserved ability should be negatively correlated with household income. An examination of the disturbance coefficients of correlation in the trivariate probit of Table 8 allows us to test this hypothesis. As can be seen, none of the correlation coefficients reach statistical significance, indicating that there is no evidence for the presence of unobserved ability that is related both to household income and entrepreneurship. Moreover the absence of significant correlations in the errors implies that the equations can be estimated separately. The main findings of the previous single-equation estimates survive once we add the taste-related variables: the probability of becoming an entrepreneur is positively associated with preferences for job-related variety, and seeking job-related variety reduces household income.

7. Conclusion

Some theorists suggest that entrepreneurs will find it valuable to be a jack of all trades; that is, that entrepreneurs must be good at a wide variety of skills to succeed. Entrepreneurs, they say, should tend to be generalists, while those who work for others should tend to be specialists. At the heart of this theory is the assumption that individuals rationally plan their human capital investments with an eye to a future choice of profession that entails one of two states — employment or entrepreneurship. The model further implies that the returns to skill variety should be positive for entrepreneurs but not for specialist employees (Lazear, 2005.) An alternative argument is that the choice of entrepreneurship is driven by a taste for variety. Entrepreneurship, its proponents contend, is known to involve a range of tasks that stimulate people with a taste for doing many different things. They argue that this taste for variety will also be reflected in an individual's preference for educational and occupational diversity. Thus people with a taste for great variety will have a broad educational background, a diverse employment pattern, a greater likelihood of being an entrepreneur, and lower income.

We studied these alternative theories using a sample survey of 830 Canadian inventors

coupled with a matched sample of 300 individuals from the general population. Consistent with both theories and with previous evidence, we found the probability of becoming self-employed and the expected number of businesses owned increase with the number of different professions and industries worked in. Some direct indicators of taste for variety obtained from the survey data are also found to predict selection into entrepreneurship.

We also examined the effects of skill variety on household income. We found that both the number of different professions and the number of industries worked in reduce household income among both entrepreneurs and employees. The effect was especially strong for entrepreneurs. For example, entrepreneurs changing professions six or more times reduce their expected household income by approximately Cdn. \$15,700 compared to those specializing in one profession, while entrepreneurs changing jobs across six or more industries reduce their expected household income by approximately Cdn. \$6,200 compared to those who stay in one industry. These results are consistent with a world in which the decision to become an entrepreneur is driven predominantly by a taste for variety.

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