

How Entrepreneurial Do you Choose to Be?
Talent, Risk Attitudes, Overconfidence and Self-Selection into Entrepreneurship

Amy Nguyen-Chyung

Abstract

The main study in my dissertation posits that prospective entrepreneurs face a spectrum of entrepreneurial choices rather than a binary employment-entrepreneurship decision and explores how cognitive determinants influence these choices. I construct a novel dataset in the real estate brokerage industry, one in which all individuals are self-employed but the roles they pursue vary in degree of risk, autonomy and returns to talent. I find differences in specialized and general talent, risk attitudes and overconfidence help predict sorting into these roles, suggesting that past research that relies solely on a self-employment definition of entrepreneurship or on uni-dimensional drivers has obscured these more complex choices.

Category: Entrepreneurship; management and economics

Keywords: Entrepreneurship, self-employment, entry drivers, cognitive determinants, risk attitudes, overconfidence, specialized talent, productivity

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Executive Summary

A large body of entrepreneurship research argues that entrepreneurs are different from non-entrepreneurs – or at least that the self-employed are different from the non-self-employed since available data are constrained. There is much less focus on how entrepreneurs differ from each other and why. Recent academic (Folta, Delmar and Wenberg 2010, Kacperczyk 2012, Levine and Rubinstein 2012, Roach and Sauermann 2012) and policy discussions (e.g., Chatterji 2012, Aulet and Murray 2013), however, are beginning to acknowledge that we need to distinguish between different types of entrepreneurs for better comprehension of their attributes, motivation and impact. How should we disaggregate the different entrepreneurial types and what characteristics drive individuals to select into these different entrepreneurial choices?

One challenge in rethinking the entrepreneurial decision is that the prior theoretical literature has tended to view the transition to entrepreneurship as a dichotomous, occupational choice between employment and entrepreneurship (e.g., Jovanovic 1982), and empirical tests often further simplify this choice into whether an individual is self-employed. In fact, much empirical entrepreneurship research over the

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last three decades (e.g., Evans and Leighton 1989; Blanchflower and Oswald 1998; Hamilton 2000; Reese and Shah 2006; Hsieh, Parker and Van Praag 2011) continues to use self-employment as the indicator of entrepreneurship despite recognition from scholars that the self-employed are often a heterogeneous group comprising everyone from consultants and doctors to gardeners and housepainters. While such simplification is often necessary due to data availability or for parsimony, it also obscures the complex set of tradeoffs and multiple choices that prospective entrepreneurs face.

Rather than viewing the entrepreneurial decision as a binary choice, I posit that individuals choose from a spectrum of entrepreneurial options. If one imagines the multiple entrepreneurial options facing an individual as levels of entrepreneurship that vary in terms of degrees of risk and autonomy and provide different returns to talent, then a natural question arises: how do individual talent, risk and related overconfidence profiles guide how entrepreneurial individuals choose to be?

The main methodological obstacle in answering this question is that it is generally quite difficult to empirically identify the relationships between individuals' traits and their choices to become entrepreneurs due to data limitations and selection concerns. Talent is generally regarded to be an important determinant, yet ideal measures are scarce, so researchers commonly rely on education, IQ or similar variable as a proxy. For those studies that do have a more tailored measure such as productivity in the industry being studied, there remain selection concerns because individual productivity is typically measured in an endogenously selected role best suited to the individual. Perhaps given the range of measurement and identification difficulties, only a few scholars examining key cognitive entrepreneurial determinants of talent, risk attitudes or

overconfidence have incorporated more than one of these in their analyses of entrepreneurial or market entry (Van Praag and Cramer 2001, Lazear 2005, Wu and Knott 2006, Hsieh *et al.* 2011). Most still rely on proxy measures, and despite theoretical evidence that the three dimensions could be correlated – as described in some of the above work which have studied some combination of two dimensions – the three measures have not been studied together.

To overcome these challenges, I construct a novel panel dataset comprised of the population of more than 40,000 entrepreneurs (who were active at any time over the period 1995 to 2012) in the real estate brokerage industry in one bounded region, San Diego County. I aggregate raw housing transaction data at the individual and firm levels and match these data to licensing data, census and geospatial data. The data are further matched for a stratified, random sample of agents responding to an original survey. I perform the core analyses on this smaller subset and corroborating analyses on the matched portion of the larger dataset. To my knowledge, no other academic study has transformed real estate data so extensively to establish a relevant entrepreneurial population, disaggregate the entrepreneurial outcome and examine several entrepreneurial drivers concurrently.

The real estate brokerage industry is ideally suited for the study of entrepreneurial choices particularly due to the dual availability of transparent and measurable entrepreneurial contract choice as well as attainable data on the key dimensions believed to drive such choices. While virtually all real estate agents are self-employed, detailed information reveals that the individuals differ considerably in their talent, risk attitudes and overconfidence and also select into a spectrum of entrepreneurial choices that vary in

terms of risk, autonomy and residual claims – that is, some are more “entrepreneurial” than others. The data therefore provide insights into the choices and choice drivers of the entrepreneurial population who start the types of businesses we see in every city.²

An important feature of the dataset is the introduction of detailed productivity data on a large entrepreneurial population that do not involve selection into occupations and is captured in the period before their entrepreneurial choice.³ Sales productivity is the measure of performance most favored by the industry and is my primary measure of talent; it is also a good measure of specialized talent, defined as ability related to production in the industry.⁴ I exploit the regulatory requirement that requires individuals first to attain two years of salesperson experience (comparable to a required apprenticeship period since individuals do not select their roles), providing a comparable non-selected measure of talent across individuals and allowing analysis of the transition into different entrepreneurial levels in the third year without endogenous timing choice when the regulatory constraint is lifted.⁵ These features are a key advantage since other entrepreneurship studies have had to compare individuals’ pre-entrepreneurship earnings across different jobs that are not truly comparable since individuals endogenously select the jobs and roles that would be best suited for them (see Roy 1951 for further explanation of the self-selection problem) or analyze the entrepreneurial choice with

² This research studies business formation rather than the creative destruction aspect of entrepreneurship.

³ The data also capture productivity of those who start in 1995 and later throughout a large part of their careers.

⁴ By analogy, Lazear refers to the cook as the specialist in a restaurant, and the restaurant owner as a generalist. I allow for the possibility that one person can possess both strong specialist skills (cooking or in this case, sales ability) as well as general talent (for restaurant management or in this case, for real estate brokerage management).

⁵ State regulations require that all individuals must first gain two years of full-time industry sales experience prior to applying for the license that enables them to become owners. In most other industries, individuals choose their initial entrepreneurial roles endogenously, so selection bias prevents clean comparison of productivity across roles.

endogenous timing. Common proxies for talent such as education and experience are also available as well as alternate industry measures, allowing tests of whether different types of talent might have different implications.

Additionally, I gather data to construct measures of risk attitudes and overconfidence, which are typically difficult to observe. I elicit cleaner measures of risk attitude and controls by conducting an original survey that includes risk questions validated experimentally and confirmed to capture responses consistent with individuals' actual risk-related behavior (Dohmen *et al.* 2010). In contrast to many studies, I do not rely on a lottery-based measure, which has been shown recently to be non-predictive of actual risk behavior (*ibid*). In the management, psychology and behavioral economics literature, overconfidence is defined as systematically overestimating one's talent on an *absolute* basis (overestimation) or *relative* to others (overplacement) or overestimating the precision of one's projections (Moore and Healy 2008).⁶ Similar to this work, I derive my main measure, *relative* overconfidence, from individual self-evaluation of performance relative to peers and their actual performance. However, while we all measure the self-evaluation via survey, I obtain actual performance from industry micro-data rather than from laboratory experiments.⁷ An *absolute* overconfidence measure is also constructed as a secondary measure.

Finally, due to licensing requirements, micro-data and mailing addresses for all agents, including those who left the industry or region, are available, avoiding survival bias that is a concern in many other entrepreneurship datasets.

⁶According to Moore and Healy 2008, the remaining empirical papers on overconfidence capture "excessive certainty regarding the accuracy of one's beliefs" (overprecision).

⁷ Other ways to measure overconfidence include revealed preference through one's actions. Malmendier and Tate (2005), for example, use the degree to which CEOs hold options beyond rational thresholds.

Institutional details and generalizability provide the basis for the proposal of four main entrepreneurial levels: employment-like (i.e., independent contractors), franchise contracts and independent ownership, and employer-owners. When employers are studied, I compare against the non-employer set of franchised and independently-owned businesses. After a two-year required sales apprenticeship, real estate agents can choose to remain a salesperson supervised by a broker (i.e., choose an employee-like, independent contractor option), start an independent business (e.g., Jane Doe Properties) or open a franchise (e.g., RE/MAX Jane Doe).⁸ The choice to become a franchisee over an independent owner reflects trade-offs similar to those faced by others starting their own businesses (and is made by at least one in every twelve US entrepreneurs (Benetrends 2009). For industries in which such categories are less applicable (e.g., no franchises), it may be helpful to think more broadly of other sets of entrepreneurial choices that vary in terms of risk, autonomy and returns to talent. For example, an individual might choose between founding or working for a start-up or becoming the CEO of a start-up that is owned by investors. Employing others is an additional key consideration, which offers opportunity to spread one's ability but also increases risks.

My main empirical models analyze the effect of multiple measures of talent (including productivity measured over the first two years and education years), risk attitude and overconfidence on the categorical dependent variable reflecting entrepreneurial choice in year 3, and I examine both binary choices and levels and exit choices. Numerous controls considered important by the literature or relevant to the industry, ranging from gender, wealth and whether a parent has entrepreneurship

⁸ Names are fictitious.

experience to agent part-time status and S&P/Case Shiller housing indices for market conditions and cohort fixed effects are also used in various specifications.

General talent, measured by education years, which is often used in the literature as a proxy for general cognitive ability, clearly drives selection into the industry and thus all self-employment levels.⁹ The results also provide evidence of a new relationship: greater general talent further increases the likelihood of selection into entrepreneurial options of greater autonomy and returns to talent when other variables are held constant. Greater *specialized* talent, measured by sales productivity, on the other hand, decreases the likelihood that one becomes an owner. The different effects of more specialized versus more general talent support Lazear's conjecture about specialized talent (Lazear 2004, 2005), which has yet to be tested with appropriate data. The specialized talent result suggests that opportunity costs outweigh the incentive effect in the decisions of more talented salespeople to choose *not* to go into independent ownership.

Risk attitudes weakly influence the likelihood of becoming an owner in the baseline binary choice regression, but is surprisingly not a significant driver when other entrepreneurial determinants are included. Greater overconfidence tends to reduce the likelihood of exit, and its effect varies based on the level of talent. The combination of results suggests that the effect of risk attitudes may have been overstated in the literature and picking up bias from other drivers, such as the commonly omitted variable of overconfidence. My result is consistent with the research that shows at the aggregate market level (Wu and Knott 2006) what I show at the individual entrepreneur level: that

⁹ Agents are more educated than the general population; the percentage of real estate agents having 4 year degrees is twice that of the general regional population. Source: US Census and findings from survey data for San Diego.

the exclusion of an overconfidence measure can overstate the effect of risk attitude on entry.

Robustness checks performed on the larger dataset, using the same productivity measure but alternate measures for risk and overconfidence, exhibit similar results. In addition to the above results, the univariate analyses confirm existing relationships found in the literature, further validating the data and the empirical approach.

Overall, the findings show that we can learn more about entrepreneurship by analyzing multiple individual dimensions concurrently and considering their influences on multiple entrepreneurial levels. The identification of a particularly relevant entrepreneurial population and creation of a new dataset help to overcome substantial empirical challenges.

This study advances the emerging literature that disaggregates entrepreneurial choices by offering a straightforward framework for understanding different entrepreneurial types and confirming the long-held suspicion that entrepreneurship and self-employment are not equivalents. I establish a set of meaningful entrepreneurial choices that reflect variation in risk, autonomy and returns to talent and that can be applicable across many settings. Since the participants in an industry are actually all self-employed yet sort into at least three distinct entrepreneurial levels – employment-like independent contracting, non-employer ownership (including franchising and independent ownership) and employer-ownership – we now have evidence that reliance on dichotomous entrepreneurial choices and self-employment data have led scholars to group together very different entrepreneurial types.

The study is among the few to address a large group of key cognitive and behavioral determinants that others had studied in subset (Van Praag and Cramer 2001, Lazear 2005, Wu and Knott 2006, Hsieh, *et al.* 2011). It also adds to the larger body of work that relates individual characteristics to economic decisions. Doing so with better data and measures allows for mitigation of selection bias and omitted variables bias as well the study of interactions and heterogeneous effects of different drivers. Specifically, having measures of both general and specialized talent and the ability to observe productivity in a non-selected setting are critical steps in the appropriate study of choice drivers. The current results shed light on prior mixed results in the empirical entrepreneurship literature on the effects of talent, risk and overconfidence.

In order to establish a more concrete conceptualization of the proposed entrepreneurial levels, it is first helpful to understand some of the institutional details of the real estate brokerage industry. I then address the rationale for studying multiple levels and dimensions in entrepreneurial choice before discussing the dataset. Finally, I perform the empirical analyses and discuss the results.

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