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The Choice to Become an Entrepreneur as a Response to Policy Incentives

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Abstract. Attempting to stimulate economic growth, governments have developed a host of entrepreneurial policy incentives. Yet such incentives have not been evaluated in terms of their attractiveness to high potential entrepreneurs facing the choice between wage employment and entrepreneurship. Using adaptive conjoint analysis and a sample of graduating MBA students from the United States, we empirically investigate the efficacy of various policy incentives by examining the trade-offs involved in the occupational choice between entrepreneurship and wage employment. In doing so, we provide a theoretical framework for entrepreneurship policy by connecting the literature on occupational choice with the literature on entrepreneurship policy incentives, and offer concrete data to policy makers seeking to influence the choice of entrepreneurship as a career option.

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1. Introduction

A growing body of research shows that, subject to survival, new firms account for a large proportion of durable job creation and economic growth in the US and other developed economies (Haltiwanger, Jarmin, & Miranda, 2013). Findings from this research are underscored by work focused on a subset of particularly successful high-growth firms (the kind that appear on the annual Inc. 500 list and have been referred to as "gazelles"). These are usually started by highly educated

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people and are credited with a significant percentage of the job and wealth creation in the economy (Acs, Parsons, & Tracy, 2008).

In pursuit of such economic development, a host of policy instruments and assistance measures are currently being deployed by governments to encourage the creation of new ventures (Audretsch, Grilo, & Thurik, 2007). However, these policy incentives rest neither on sound theoretical footing nor do they build on extant empirical understanding of how people choose the occupation of entrepreneurship (Acs, Åstebro, Audretsch, & Robinson, 2016; Brown, Mawson, & Mason, 2017; Parker & Gartner, 2004). Empirical evidence shows that large scale and universal policy initiatives designed to encourage entrepreneurship may not be effective (Figueroa-Armijos & Johnson, 2016), the effects of the same policy initiative may vary based on the level of economic development (Martínez-Fierro, Biedma-Ferrer, & Ruiz-Navarro, 2016) and that policies might be more effective at the regional level (Butler, Galassi, & Ruffo, 2016). It is also unclear if such policy interventions that encourage entrepreneurship actually lead to economic growth (Åstebro, 2017).

Given these questions about policy design at the macro level are intended to influence entrepreneurship at the micro level, we integrate occupational choice (OC) literature with the literature on entrepreneurial policy incentives in order to understand what resources and facilities entrepreneurs actually value when they make the decision about starting a new venture and what policy makers actually can provide. OC research models entry into entrepreneurship as a choice between wage employment and self-employment (Parker 2009) using the assumption that entrepreneurship is one of the many career choices available (Burton et al., 2016) and argues that this decision is influenced by individual-level variables such as liquidity constraints (e.g., Evans & Jovanovic, 1989) and risk propensity (e.g., Kihlstrom & Laffont, 1979). Entrepreneurship policy literature describes what policy makers actually provide to encourage individuals to become entrepreneurs (Audretsch et al., 2007). Combining the two literatures allows us to understand mismatches between policy incentives and entrepreneurial decision-making criteria in the choice to become an entrepreneur.

Our research sheds light on two specific research questions: In making the choice between entering the labor market and the market for entrepreneurs, which resources do decision-makers value? What absolute and relative utilities do prospective entrepreneurs derive from each of these resources? The key here is to formulate a research design that allows us to concurrently analyze how specific incentives and policies combine to induce people to make the move from the labor market into entrepreneurship. In so doing, we answer a third question of: What is the boundary between the labor market and the market for entrepreneurs? We operationalize the OC decision using conjoint analysis because the method has been effectively applied in marketing to estimate demand for particular product features, service experiences and even employment preferences.

Our findings show a broad distribution in the effectiveness of incentives currently offered by governments. For example, familiar incentives such as office space and traditional funding sources such as bank loans are less efficacious than cheaper alternatives such as health insurance and mentoring. More surprisingly, in terms of support mechanisms to foster entrepreneurship, an entrepreneurial network organized by the government was of the least value while an experienced entrepreneur as mentor was valued at the highest level. Thus, our study first contributes to the literature on OC in economics by connecting OC with policy incentives. Secondly, it contributes to the literature on policy incentives by pointing out limitations as well as possible levers hitherto unused by governments to stimulate entry into entrepreneurship. Third, following practices in economics research, we convert findings from the conjoint analysis, measured in terms of utilities, into dollar values to derive a quantitative boundary between the labor market and the market for entrepreneurs. This post-hoc analysis shows the market for entrepreneurs is more nuanced than we might first suspect. On one hand, governments can indeed manipulate prices in the market for entrepreneurs in ways that induce entry. On the other hand, there are diminishing returns to these incentives and policies that point to a concrete boundary between labor and entrepreneurship. In the conclusion, we discuss the implications of this impermeable boundary in terms of macro-level incentives and micro-level decision criteria.

2. Literature Review

Two separate literature streams that do not usually speak to each other contribute to define the boundary between labor markets and the market for entrepreneurship. The OC literature in economics (Banerjee & Newman, 1993; Ginzberg, Ginsburg, Axelrad, & Herma, 1951) theoretically models and empirically examines individual decisions to exit the labor market and enter entrepreneurship (e.g. Evans & Leighton, 1989; Lazear, 2005). The literature on entrepreneurship policy also seeks to move individuals from the labor market into entrepreneurship (e.g. Audretsch et al., 2007; Hart, 2003) in order to stimulate job growth.

Policy makers have devoted significant attention to entrepreneurship as the driver of economic and job growth. Theoretically, entry into entrepreneurship can be explained by derived demand. Derived demand is the relationship between the price and quantity of a factor of production when the corresponding output market is at equilibrium (Bresnahan, 1986). This implies changes in the demand for a (consumer) product will cause changes in the demand for its factors of production (Clark, 1917). Bishop, Graham, and Jones (1984) cite a classic example from Vaile, Grether, and Cox (1952) that between 1929 and 1932, the production of all consumer goods fell from an index of 100 to 80 while that of all capital equipment

fell from 100 to 35. The swings in factor input demand are magnified due to the acceleration principle and behavior of purchasing agents (Bishop et al., 1984). In our case, the derived demand for entrepreneurship occurs due to the direct demand for jobs in the economy. Derived demand theory suggests that in a climate of high demand for jobs, governments are likely to turn to policy levers that encourage entrepreneurship in order to create more employment opportunities.

Therefore, the macro level entrepreneurship policy literature, and the micro level occupational choice literature both focus on the same thing – moving individuals from the labor market to entrepreneurship – albeit for different reasons. Both are concerned with moving individuals from the labor market to entrepreneurship. Through an in-depth review of both literatures, we identify linkages that inform the empirical research design of our study. We begin with a review of the literature on OC followed by a review of the literature on policy incentives before describing our own empirical work.

Occupational Choice

The earliest models of OC explored the choice between entering the labor market and remaining unemployed. In these models, this decision was influenced by search costs, cost of information and length of unemployment (Gronau, 1971; McCall, 1970). The choice set later expanded to include self-employment, which is considered a general proxy for entrepreneurship (e.g., Carree, Van Stel, Thurik, & Wennekers, 2002; Wong, Ho, & Autio, 2005). These later models that have come to dominate the literature explored a variety of individual-level factors such as risk (Cramer, Hartog, Jonker, & Van Praag, 2002; Kihlstrom & Laffont, 1979), ability (Åstebro, Chen, & Thompson, 2011), liquidity constraints (Evans & Jovanovic, 1989; Minniti & Lévesque, 2008) and current employment status (Earle & Sakova, 2000; Kuhn, 2000). Of these, liquidity constraints have been used extensively as an explanation for occupational choice (Minniti & Lévesque, 2008). Individuals with lack of access to capital may be unable to start a firm (Evans & Jovanovic, 1989) implying that wealthier individuals are more likely to start ventures and suggesting that, given the means, some less wealthy individuals might choose to start ventures instead of remaining in paid employment.

Entrepreneurial ability is another highly studied predictor of entry into entrepreneurship. Entrepreneurs are required to have varied abilities that help in all aspects of firm creation (Lazear, 2005). These abilities can be augmented by education and prior experience (Holmes & Schmitz Jr, 1990). Furthermore, ability in conjunction with prior employment status of the individual – whether unemployed or not – offer significant implications for the quality of entrepreneurship (Earle & Sakova, 2000). Burke, FitzRoy and Nolan (2000) demonstrate the ability effect using a sample of university entrepreneurs. Their research reports that while better educated (higher ability) individuals are less likely to enter entrepreneurship, those that do, create disproportionately more jobs

than their less educated (less able) entrepreneurial peers. Entry into entrepreneurship by unemployed individuals leads to lower-quality firms that are less likely to generate growth than when employed persons enter entrepreneurship (Earle & Sakova, 2000; Kuhn, 2000). The stream of work on this particular aspect of OC has converged on the idea that people in the two tails of the abilities and wage distribution are more likely to enter entrepreneurship than those in the center of the distribution. In a recent investigation of this phenomenon, Åstebro et al. (2011) showed frictions in the labor market led to higher entrepreneurial entry from both tails of the wage distribution. The study also corroborates the Burke, FitzRoy and Nolan (2000) finding that individuals from the upper tail (usually people with college degrees or higher) tend to perform better in entrepreneurship than those from the lower tail, namely, those low in abilities and earnings prior to entering entrepreneurship.

In addition to abilities and income demographics of potential entrepreneurs, certain personality traits have been theorized to influence entry into entrepreneurship. Prominent among these is risk propensity, with less risk-averse individuals shown to be more likely to choose entrepreneurship (Cramer et al., 2002; Kihlstrom & Laffont, 1979). Further, Wu and Knott (2006) showed risk preferences can be differentiated according to ability and market uncertainty. Findings from this study showed that many entrepreneurs are overconfident with respect to entrepreneurial ability but risk averse with respect to market uncertainty. Other research showed entrepreneurs and non-entrepreneurs do not differ in risk-aversion (Miner & Raju, 2004) and proposed instead entrepreneurs differ in their perceptions of risk (Busenitz & Barney, 1997; Simon & Houghton, 2003). However, the risks associated with entry into entrepreneurship have at times been shown to be mitigated by factors such as information asymmetries (Janney & Dess, 2006; Shane & Venkataraman, 2000), personal networks and (again) abilities (Kim, Aldrich, & Keister, 2006).

Most studies in the OC literature do not expressly address the role of government policies or incentives in moving people from wage employment into entrepreneurship. Rare exceptions include tax policy (Kuhn, 2000) that in certain cases sets up perverse incentives for tax avoidance (Storey, 1991). However, entrepreneur friendly tax regimes and public funding subsidies (Marr & Fliaster, 2003) appear to be effective in encouraging more risk-averse individuals to start new ventures (Gentry & Hubbard, 2000) and also favorably influence hybrid entrepreneurship (Folta, Delmar, & Wennberg, 2010).

Policy Incentives

The literature on entrepreneurship policy seeks to move individuals from the labor market into entrepreneurship (e.g. Audretsch et al., 2007; Haltiwanger et al., 2013; Hart, 2003) as a means to stimulate job growth. In general, the pursuit of economic growth (Carree & Thurik, 2003; Minniti, 2008) and the persistence of small firm failure (Auerswald, 2007; Holtz-Eakin, 2000), provide the two major

rationales for public policy to support entrepreneurial activities in various economies around the globe. We reviewed this work to catalog the empirical incentives intended to promote entrepreneurship described across peer-reviewed journals, policy books and manuals. Gilbert, Audretsch, and McDougall (2004), for example, offer details on U.S. policies at the local, regional, state and federal levels. Hart (2003) compiles a series of expositions examining these policies. In the *Handbook of Research on Entrepreneurship Policy* edited by Audretsch et al. (2007), we find a recent series of studies of entrepreneurship policy initiatives across multiple countries. In specific, Hoffmann (2007) provides a comprehensive list of policies and incentives commonly offered in developed countries. Hoffmann drew his list from a broad survey of works including those by Lundström and Stevenson (2002), Stevenson and Lundström (2001) and the OECD (OECD, 1998, 2001, 2003, 2005a, 2005b). We present that list in the first column of Table 1.

Several policies identified in our review can be converted into variables that directly affect OC decision criteria at the level of the individual. Other policies do not have such micro-level correlates. The third column in Table 1 shows policies that can be operationalized within the OC decision and those that cannot (we discuss operationalizations in more detail in the Method section of this paper). Here we seek to build a theoretical case for each, briefly describing the inventory provided by Hoffmann (2007), pointing to additional information from relevant prior literature, and where feasible, building links to the literature on OC.

Some policy initiatives listed in Table 1 are targeted toward specific types of ventures (e.g., technology ventures) or groups (e.g., women). One case in point consists in the number of government assistance programs such as innovation awards that have been set up to foster technology transfer and commercialization of R&D to and from the Small Business Innovation Research (SIBR) program and universities (Link, 2007; Siegel, 2007; Wessner, 2007). Other policies operate at the country level such that they are relevant in cross-country comparisons of the choice to become an entrepreneur but not directly applicable to individual-level variations within one country (e.g., bankruptcy and IP protection laws). IP protection and regulatory policies focusing on products and markets are generally justified on a market failure logic (Audretsch et al., 2007; Brock & Evans, 1989; Parker, 2007). Thus, only a subset of the policies in Table 1 is relevant to the more general question of how do individuals make the choice to become an entrepreneur. In Table 1 we grayed-out those that are not relevant to our research question.

Within this subset of relevant policy incentives, some are more effective than others. For instance, consider policy focused on providing capital to start-ups. Policy interventions that provide capital typically support either bank loans for entrepreneurs (Elul & Gottardi, 2015) or private equity funding (Link, 2007). These policies are designed to relax liquidity constraints (Evans & Jovanovic, 1989; Holtz-Eakin, Penrod, & Rosen, 1996; Minniti & Lévesque, 2008) to allow

capital constrained individuals to move into entrepreneurship (Amit, Muller, & Cockburn, 1995). The effectiveness of such interventions is questionable (Parker, 2007) as bank lending might be a signal of entrepreneur quality (Cressy, 1996), fast-growing firms may pay more interest on their loans (Rostamkalaei & Freel, 2016) and small firms might not want to borrow from banks in the first place (Cowling, Liu, Minniti, & Zhang, 2016). Other policies provide entrepreneur-friendly tax regimes to encourage entrepreneurship (Baliamoune-Lutz & Garello, 2011; Holtz-Eakin, 2000). However, these may be small and ineffective (Bruce, 2000; Bruce & Mohsin, 2006; Gentry & Hubbard, 2000), and may also generate unintended consequences (Link, 2007) such as tax avoidance (Storey, 1991) and underreporting of income (Åstebro & Chen, 2013; Kuhn, 2000).

Other policies are designed to offer infrastructure and support for entrepreneurs and are effective in encouraging entrepreneurship (Audretsch, Heger, & Veith, 2015). Entrepreneurial skills are also important to succeed as an entrepreneur and can be taught by including entrepreneurship within the regular education system (Martin, McNally, & Kay, 2013; Van der Kuip & Verheul, 2003). Apart from entrepreneurship education, policy initiatives often offer additional support and infrastructure in the form of incubators and office space, formal and informal entrepreneurial networks, and mentoring and training programs (Stevenson & Lundstrom, 2007). More generally, entrepreneurial policy may also include special social safety nets (Henrekson & Roine, 2007) in the form of re-employment policies (Storey, 1991) and portable health care policies (Holtz-Eakin, Penrod & Rosen, 1996). Each either reduces risk or eases transition in and out of entrepreneurship. In healthcare for example, Gumus and Regan (2009) show health insurance impacts entrepreneurial activity while Fairlie, Kapur, and Gates (2011) show bundling health insurance with employment creates a lock-in that leads to less businesses being formed. These policies can directly influence individual OC decisions and may therefore be linked with the literature on OC as presented in Table 1.

Table 1 - Links between Policy and Entrepreneurship Policy/OC Literatures – With Descriptions of Operationalized Elements

Hoffmann (2007) policy variables: Brief description	**Support from Entrepreneurship Policy and OC Literature**	**Operationalization in the Present Study**
Technology Transfer: legislation to encourage technology and knowledge transfer from universities and other R&D institutions	(Link, 2007; Siegel, 2007; Wessner, 2007)	**Funding source**: Initial funding comes from a large firm (you help them to commercialize their technology)
Private demand conditions: willingness of established firms to use new firms as suppliers or partners	NA	**Support**: a colleague within a client firm **Funding Source**: funding comes from a client that pre-orders

Loans, Venture Capital, Business Angels, Stock Markets and Buyouts: supply of debt capital, private equity funding, a well-developed stock market	(Cressy, 1996; Link, 2007; Parker, 2007; Rostamkalaei & Freel, 2016)	**Funding:** - $100,000, $1M, $5M of initial venture funding - Typical values of angel and VC early stage investments (Morrissette 2007) **Funding source:** - Initial funding comes from a large firm (you help them to commercialize their technology); - Initial funding comes from a bank (a loan to be repaid with interest); - Initial funding comes from a client that pre-orders (in exchange for 30% ownership in the venture); - Initial funding comes from an investment fund (in exchange for 30% ownership in the venture)
Wealth and bequest taxes, capital taxes, personal income taxes, business and fiscal incentives: impact capital, investment; reduce benefits of starting a firm; corporate taxes	(Baliamoune-Lutz & Garello, 2011; Bruce, 2000; Bruce & Mohsin, 2006; Fairlie et al., 2011; Gentry & Hubbard, 2000; Gumus & Regan, 2009; Holtz-Eakin, 2000; Link, 2007)	**Personal Compensation (PC):** - $40,000, $90,000, $200,000 in PC during your first year (Based on a range of initial starting salaries in a typical US business school (http://www.businessweek.com)) **Health Coverage:** - 1 month, 6 months, 1 year, 3 years of health coverage
Entrepreneurship Infrastructure: Infrastructure of interlinked regional networks, other entrepreneurs, lawyers, etc.; incubators; technology infrastructure	(Audretsch et al., 2015; Link, 2007; Rotger, Gørtz, & Storey, 2012; Stevenson & Lundstrom, 2007)	**Support:** - An experienced mentor to help you with things you do not know - An entrepreneur network run by the local chamber of commerce **Office Space:** 6 months, 1 year, 3 years 6 months of free office space (sufficient for the needs of the venture)
Social security discrimination: social security benefits, health care, unemployment benefits	(Evans & Leighton, 1989; Fairlie et al., 2011; Gumus & Regan, 2009; Henrekson & Roine, 2007; Holtz-Eakin et al., 1996; Storey, 1991)	**Health Coverage:** - 1 month, 6 months, 1 year, 3 years of health coverage **Future employment:** - I would have a guarantee of a job offer at an appropriate level for me if the venture doesn't work - I would find my own next job if the venture doesn't work

Entrepreneurial motivation, communication about heroes: create an interest in entrepreneurship using motivating communication and stories	NA	**Support:** - A reliable supplier that can deliver to your specifications - Your spouse's/family's encouragement - An experienced mentor to help you with things you do not know - A colleague within a client firm interested in co-developing an offering with you - An entrepreneur network run by the local chamber of commerce
Entry Barriers/ Deregulation, Access to foreign markets, Procurement regulations: minimizing regulations, opening trade barriers, allocating share of procurement to new companies	(Audretsch et al., 2007)	Not operationalized – Policy is specific to certain types of ventures
Administrative burdens, labor market regulations, bankruptcy legislation: macro level policies: difficulties in starting a new business; rules to hiring and firing; creditors' related bankruptcy laws	(Audretsch et al., 2007; Brock & Evans, 1989; Lee, Peng, & Barney, 2007; Parker, 2007)	Not operationalized - Sample restricted to the US
Traditional business education, entrepreneurial education: management and entrepreneurship specific education impact abilities	(O'Connor, 2012; Van der Kuip & Verheul, 2003)	Not operationalized – Sample is homogeneous with respect to business education since they are part of an MBA program
Group specific initiatives: directed towards minorities, women	(Anna, Chandler, Jansen, & Mero, 2000; Foss, Henry, Ahl, & Mikalsen, 2018; Klyver, Nielsen, & Evald, 2012)	Not operationalized - Not in the scope of the study

Notes: The last four (greyed) rows of Table 1 indicate variables described by Hoffman (2007) but not operationalized in the present study.
The complete list of variables (attributes) and levels for each variable and the procedure through which the different variables are presented to the respondent is described in Appendix B.

It should be noted that the policy levers in Table 1 do not always work in isolation. In implementation, multiple potentially *interrelated* policy levers are available to governments to encourage entrepreneurship. For example, a potential entrepreneur can overcome a lack of knowledge or ability through support networks and training programs provided through policy, or reduce liquidity constraints using innovative funding sources supported by public policy. We also know from prior research that many of the criteria for OC are interconnected (Lazear, 2005). Douglas and Shepherd (2000), for example, model the decision to become an entrepreneur as a utility maximizing choice between factors such as ability, decision-making control, risk exposure, work effort required and other

working conditions. In addition, Levesque, Shepherd, and Douglas (2002) consider the role of time in determining the utility of career choice and also point out that access to resources could modify the OC of potential entrepreneurs.

In our empirical analysis, we examine all relevant entrepreneurial policy incentives listed in Table 1 and compare them in terms of effectiveness in moving individuals into entrepreneurship. We measure this both in terms of individual likelihood to become an entrepreneur and cost to the policy maker. We then examine interconnections in order to understand how bundles of policy incentives interact to move people into entrepreneurship.

3. Empirical Approach

Guided by our literature review, our empirical research design calls for a simultaneous analysis of policy levers intended to move individuals from the labor market into entrepreneurship. The task presents several significant challenges. The first is identifying a method to collect and analyze data on different policy levers, each with many possible associated quantity levels or alternatives. The second is finding a population of individuals capable of creating the kind of ventures policy makers are interested in encouraging, and not already engaged in startup activity. The third is connecting monetary costs of provision with the results to model the market for entrepreneurs with the clarity of real resources and dollars (we do this in a post-hoc analysis). We describe how we deal with these challenges with our method, instrument and choice of sample. We then present results and post-hoc analyses.

Adaptive Conjoint

Conjoint analysis was introduced (Green & Rao, 1971) to offer a method of constructing sets of interrelated part-worth utilities based on individual preferences. Commonly known for applications in evaluating consumer product feature tradeoffs (from computers to automobiles), conjoint has also been used for sophisticated investigations of health maintenance plans, financial services and demand for new pharmaceuticals (Green, Krieger, & Wind, 2001). A study functionally similar to ours investigated individual preferences for re-enlistment in the US Navy, considering attributes that include duties, working space, health needs and compensation (Kraus, Lien, & Orme, 2003). And a contemporary study technically similar to ours used a hybrid form of conjoint - adaptive conjoint - to estimate the piecewise linear utility function of school administrators and faculty in admission and scholarship decisions along eight different financial and non-financial attributes, each with many levels (Belloni, Lovett, Boulding, & Staelin, 2012). These factors guided us to select adaptive conjoint as an empirical approach to our research question. We provide further details about the method in Appendix A.

Instrument Development

We assigned levels for each attribute based on extant literature ("Operationalization", column 3 of Table 1), complemented with 35 years of entrepreneurial experience within the research team and anecdotal evidence from service providers in entrepreneurial communities in the US and Europe. We pre-tested the inventory of resources and levels first with two scholars in the field not otherwise related to the investigation, seeking input on clarity and completeness. We then conducted a second pre-test of the revised inventory with a panel of 12 experienced entrepreneurs, focusing on ensuring the levels were realistic and credible, and presented face validity. Finally, we coded the inventory (Table 3) into the adaptive conjoint software and ran two pilots with 20 subjects who did not participate in the final study. We established content validity of questions through a series of debriefs with the individuals who participated in the pilot study. Since participants get a different set of questions depending on their initial responses, we also calculated the time it took each participant in the pilot to complete the study – on average approximately 20 minutes. The adaptive conjoint procedure was implemented using production software from Sawtooth Technologies (Gustafsson, Herrmann, & Huber, 2007; Sawtooth Software, 2007). The complete list of variables and levels in the current study and the procedure through which the Sawtooth software presents the variables and levels to the respondent is described in Appendix B.

Sample

Subjects for the study were drawn from two graduating MBA classes in the US. MBA students are particularly appropriate for the purposes of this study for five complementary reasons. First, a substantial proportion of graduating MBA students have taken entrepreneurship courses and express a desire to become entrepreneurs in the future (Fiet, 2001). At the same time, and as a practical matter, it would take particular incentives to move them from accepting lucrative job offers in the wage economy, to starting new ventures (Kher et al., 2012). In other words, MBA students are not only likely to be aspiring entrepreneurs, but unlike other subjects that may be considered more "entrepreneurial", MBA students are more likely to seriously consider tradeoffs between entry into the market for entrepreneurs as opposed to entry into the labor market. Third, MBA students represent the characteristics of entrepreneurs likely to create successful high-growth firms, responsible for job and wealth creation in the economy (Acs et al., 2008), and are of particular interest to policy makers. Fourth, MBA students are knowledgeable in decision analysis and likely to be familiar with the particular variables of interest in the study to make considered tradeoffs between different attributes and levels, as many are considering their next means of generating income. Fifth and most importantly, since MBA students do not typically choose entrepreneurship as a career right after graduation, this sample allows us to draw implications about what it would take to create a broader market

for entrepreneurs beyond those who have already proactively self-selected into it.[2]

We restricted the sample to developed economies, specifically US, since the impact of entrepreneurship on economic growth is shown to be higher in developed countries than in developing countries (Carree et al., 2002). Further, research suggests that focusing on policy incentives for entrepreneurship in developed countries is more useful since it is probably the most important lever to stimulate the growth of these economies (Wennekers, Van Stel, Thurik, & Reynolds, 2005).

Procedure

We started sampling procedures by e-mailing 355 MBA students inviting them to participate in a study that sought to identify various factors that encourage or discourage entrepreneurship. Our first email contact generated 120 complete responses. We then sent reminder e-mails over the following three weeks and received a total of 181 complete responses – a response rate of 51%. Later respondents showed no systematic biases in responses or demographic characteristics. In addition to those who completed the survey, 109 respondents connected to the questionnaire but did not complete it, representing a dropout rate of 30.7%. More than 80% of dropouts did so in the first two pages of the instrument and demographically, there was no systematic difference between them and the final sample of completed responses.

In a pre-analysis of completed responses for validity, we eliminated 14 responses based on three criteria: 1) analysis of data for statistical indications of auto-response (eliminating 3 observations); 2) analysis of the R-square value of each entire observation (eliminating 9 observations that generated an R-square value of less than 0.5 for the entire observation); and 3) content validity (eliminating 1 observation in which $40,000 in personal compensation was assigned a higher utility than $200,000, and a second observation in which six months of health insurance was assigned a higher utility than three years of health insurance). The final sample size used for the analysis was 167.

Descriptive statistics for the sample presented in Table 2 attest to the representativeness of the subject pool with regard to the population of graduating MBAs in the US. Of the total respondents, 66.5% are between 25 and 29 years old, 74.9% are male, and 62.9% are unmarried.

2. In addition, we do not try to control for opportunity as research shows that more than 90% of ventures do not start with a specific opportunity (Reynolds, Carter, Gartner, & Greene, 2004) but are based on the entrepreneur's personal situation (Benz & Frey 2008) and a rough idea, which may evolve and develop into something more concrete in the course of the venturing process.

Table 2 – Descriptive Demographic Statistics of Sample

Characteristic	Percent of Sample
Age (years)	
20 to 24	1.8 %
25 to 29	66.5 %
30 to 34	25.1 %
35 to 40	6.6 %
Gender	
Female	25.1 %
Male	74.9 %
Highest degree received	
Undergraduate	50.9 %
Masters	24.0 %
Doctoral	25.1 %
Marital status	
Married	37.1 %
Not married	62.9 %
Parents with entrepreneurial experience	
Neither	62.3 %
Mother	4.8 %
Father	25.7 %
Both	7.2 %
Dominant area of work experience	
Firm with 500 or more employees, or government	70.7 %
Firm with fewer than 500 employees	29.3 %
Completed a class in entrepreneurship	
No	29.9 %
Yes	70.1 %

Once an individual accepted the email invitation to participate in the study, they were directed to an online link to the instrument. The first page in the instrument presented an introductory paragraph explaining the decision scenario: Respondents were asked to consider their current situation as it was and what it would take to give up their current job offer and take up entrepreneurship. The initial set of questions collected demographics and details about prior experience. Respondents were then presented with a 7-point scale evaluating the levels of different resources for starting a new venture. For resources such as personal compensation, we assumed $200,000 is better than $40,000 so we limited initial evaluation to non-financial resources such as support alternatives and funding sources. In the next step, participants were asked to consider how important

particular differences such as "3 years of health coverage" instead of "1 month of health coverage" were, if two entrepreneurial opportunities were the same in every other way. After that, respondents evaluated the attractiveness of two entrepreneurial opportunities that were similar in every way except differing levels of two or three sets of resources. Finally, respondents were shown three baskets consisting various levels of their most preferred resources and were asked to rate on a 100-point scale how likely they were to become entrepreneurs in each case. The adaptive conjoint software dynamically generates each question based on the respondent's answer to the previous question and therefore the resources and levels each respondent encountered were unique.

Model Variables
Our model thus includes the following variables:

Independent Variables We analyzed seven independent variables identified by our literature search, presented in Table 1 and organized in Table 3. These include resources of funding, personal compensation, office space, support, health insurance, future employment, and funding source, that policy makers might use as levers to encourage entry into entrepreneurship. In conjoint parlance, these resource variables are referred to as attributes, and we use the terms interchangeably.

Dependent Variables We analyze two dependent variables:

i. Relative utility of each level of each resource/incentive, estimated by the software

ii. Likelihood of moving from wage employment into entrepreneurship – measured through intention evaluations of three resource baskets scored on a 100-point respondent-reported scale, consistent with prior studies in the literature on entrepreneurial intent (Reynolds et al., 2004; Zhao, Seibert, & Hills, 2005).

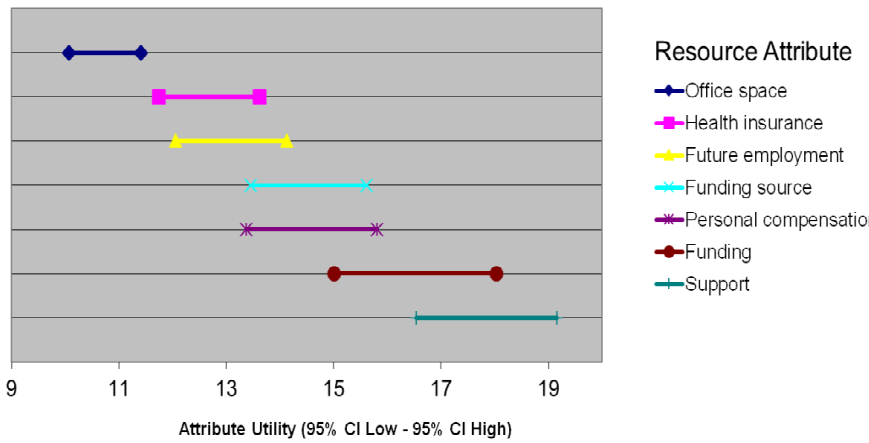
4. Results

Utility for Different Resources/Incentives (Dependent Variable 1)
Based on each subject's responses to different combinations and levels of resources/incentives, the adaptive conjoint analysis software computes final utility values for each unique attribute level, for each individual respondent, using OLS regression. Utility values for different levels of each resource describe how much on average each level of a particular attribute is valued relative to the others in the study. Utility is calculated as part-worths, scaled against an arbitrary constant within each attribute. This makes magnitude the meaningful result to

interpret, not positive/negative sign (Orme 2006). For example, in the case of funding, $100,000 of initial venture funding received a utility score of -58.83, $1million a score of 2.36, and $5million, a score of 56.46. In implementation, even $100,000 of initial venture funding could well have positive utility to an aspiring entrepreneur, and the incrementally higher dollar amounts present higher utilities described by the differences reported in our study. Incidentally, the value ordered results for quantitative resources such as funding amounts and personal compensation, with the highest levels valued the highest and lowest levels valued the lowest, offers reassuring face validity for our study.

We begin the presentation of our results with a graphical representation (Figure 1) of the 95% confidence interval distribution of the aggregated utilities for each resource.

Figure 1. Plot of Utility by Resource Attribute



Respondents in the study exhibited the strongest preference for support (mean utility of 17.85) and funding (mean utility of 16.52), while office space (mean utility of 10.74) was the least valued. Table 3 presents mean utility scores and confidence intervals for each resource included in the study as well as specific utilities for each of the levels of that resource.

Table 3 - Attribute and Level Utility Means and Confidence Intervals

Attribute*	Mean	95% CI High	95% CI Low	Level Utility
Funding	16.52	18.02	15.01	
$100,000 of initial venture funding				-58.83
$1million of initial venture funding				2.36
$5million of initial venture funding				56.46
Personal Compensation	14.59	15.81	13.37	
$40,000 in personal compensation				-51.50
$90,000 in personal compensation				1.56
$200,000 in personal compensation				49.94
Office Space	10.74	11.40	10.07	
6 months of free office space				-36.67
1 year of free office space				-0.71
3 years of free office space				37.38
Support	17.85	19.16	16.54	
A reliable supplier that can deliver to your specifications				1.92
Your spouse's/ family's encouragement				6.02
An experienced mentor to help you with things you do not know				38.07
A colleague within a client firm interested in co-developing an offering with you				-2.00
An entrepreneur network run by the local chamber of commerce				-44.01
Health Insurance	12.68	13.61	11.74	
1 month of health coverage				-40.94
6 months of health coverage				-13.84
1 year of health coverage				12.81
3 years of health coverage				41.97
Future Employment	13.09	14.13	12.05	
I had job offer which would be waiting for me				18.27
I would have a guarantee of a job offer at an appropriate level for me				26.27
I would find my own next job				-44.53
Funding Source	14.53	15.61	13.45	
Initial funding comes from a large firm				5.03
Initial funding comes from a bank				-13.38
Initial funding comes from a client that pre orders				12.94
Initial funding comes from an investment fund				-4.59

Notes: (N=167); Negative utility is not to be read as disutility. Adaptive conjoint zero centers the results and negative utility is simply a lower utility.
The complete list of variables (attributes) and levels for each variable and the procedure through which the different variables are presented to the respondent is described in Appendix B.

Utility value differences within the two qualitative resource categories (funding source and support) held two results we highlight. First, among the types of support offered, an experienced mentor was the most important (Relative Utility: 38.07) while the least valued, was an entrepreneurial network run by the

local chamber of commerce (Relative Utility: -44.01) which is a common form of support that is provided for entrepreneurs. Second, with regard to funding source, pre-orders from clients in exchange for 30% equity ownership were valued the most (Relative Utility: 12.94), followed by funding from a large firm (Relative Utility: 5.03). Funding from an investment fund (Utility: -4.59) and bank loans were valued lower (Relative Utility: -13.38). These results suggest a preference for prospective entrepreneurs to partner with other stakeholders to procure funding rather than getting funding from investment funds or banks. This finding coheres with earlier work connecting windfalls such as inheritance with entry into entrepreneurship (Blanchflower & Oswald 1998) in that access to resources without future financial penalties significantly lowers the barrier to entrepreneurial entry.

Further, there are interesting comparisons we make across resource categories. The difference in utility between the highest and lowest rated support measures – experienced mentor and entrepreneur network is 82.08. This is comparable to the relative utility of 2 years and 11 months (~ 3 years) of health care (Utility: 82.91). This has implications for policy incentives design and tradeoffs especially when we account for the cost to provide each of these resources. We take up this analysis in the "Measuring the Market" section of this paper.

Likelihood of Moving from Wage Labor to Entrepreneurship (Dependent Variable 2)

In addition to addressing the research questions we highlight at the start of this paper, we offer a methodological contribution. Little used in entrepreneurship, conjoint offers a useful method for analyzing preferences within a complex set of interrelated variables. As a result, we offer a somewhat expanded discussion on the likelihood analysis of conjoint data in hopes that it makes the method more accessible to entrepreneurship scholars.

Once the adaptive conjoint process identifies the top (in our case three) most preferred resources for a given subject, it presents subjects with three different resource baskets containing varying levels of those most preferred resources (highest, lowest and intermediate) and asks subjects to report a likelihood (on a scale of 0–100%) of moving into entrepreneurship based on the resources presented in each basket. For example, if a subject's most preferred resources consisted of office space, salary and healthcare, the software might dynamically generate and present three alternative baskets as follows:

Basket #1 (Lowest levels): 6 months office space, $40,000 salary, and 1 month healthcare
Basket #2 (Highest levels): 3 years office space, $200,000 salary, and 3 years healthcare

Basket #3 (Intermediate levels): 1 year office space, $90,000 salary, and 1 year healthcare

The data gathered from this question in the interview are used to estimate likelihood using the following:

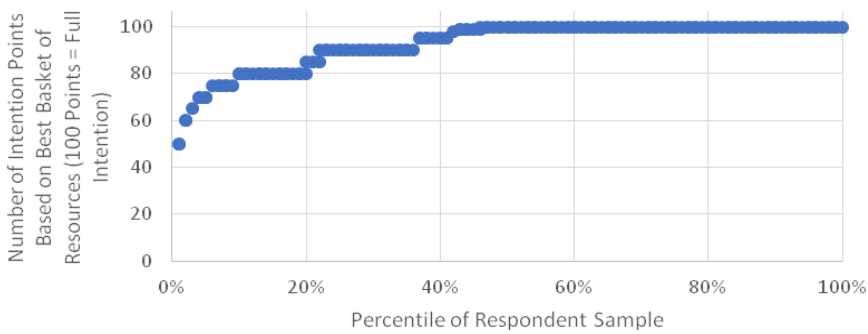
$$\mathbf{Ln}\left[\frac{p}{100-p}\right] \sim a + b_1\mathbf{x}_1$$

Where:
p = the predicted likelihood of selecting one of the particular baskets
x_1 = the basket's utility based on the final "uncalibrated" utilities
b_1 = the coefficient used to weight the utilities
a = the intercept parameter from a regression of utilities to best predict logits of likelihood

As a last step, utilities are calibrated by multiplying each by b_1. The intercept is then divided by the number of attributes, and the quotient added to the utility for every attribute level (Johnson, 2007).

The profile of intention scores within our sample is reflected in Figure 2. 100% likelihood (100 intention points) was achieved by 54% of the respondents based on (at least) one of the presented baskets, and no respondent reported a likelihood percentage of less than 50%. The mean of the distribution of likelihood each individual reported on their most preferred basket of resources is 93% and the mode is 100%. Thus, on average, only 7% of the variance in movement from wage employment into entrepreneurship is unaccounted for, based on the resources/incentives used in the study. This finding is reassuring because it validates the selection of resource attributes and levels.

Figure 2. Plot of Intention Likelihood Points based on Highest Level Resource Basket



Post-hoc analyses: Measuring the Market

The main results presented in our study describe the impact of how specific resources influence individual willingness to enter entrepreneurship, as well as an

overall view of the aggregate effectiveness of those resources in impacting entrepreneurial intention. We convert the direct results measured in utilities into monetary terms to facilitate a more intuitive understanding of the findings. Converting empirically derived utilities to monetary measures based on practical reality has well-established precedents that show how such extrapolations may be theoretically useful (Capps, Dranove, & Satterthwaite, 2003; Dobson & Kalish, 1993; Killeen, 2009). We began by pricing all resources used in the conjoint analyses in terms of current market value and re-estimating our model in completely financial terms (Orme, 2001). This analysis included the following steps:

i. Calculate the cost of providing each resource in each basket to each subject (Table 4).

ii. Create a new binary (dependent) variable named "Full Intention" and use logistic regression to estimate resource levels of full intention for each individual in the sample.

iii. Aggregate values and intention to model the market from a financial perspective.

Cost of provision For some resources/incentives such as compensation and funding, dollar values could be assigned directly. Where values could not be assigned directly, we used readily available economic data to estimate how much it would cost policy makers to provide that particular resource at that level. For example, we derived health insurance costs by examining a variety of health plans offered by four different online insurance agencies (all these data are from 2011, when the respondent data were collected).

Table 4 - Utilities of Resources and Levels with Cost of Provision

Resource/ Level of Resource	Cost to Provide	Sources and Calculations of Cost to Provide
Funding		
$100,000 of initial venture funding	$100,000	Typical values of angel and VC early stage investments (Morrissette 2007)
$1 million of initial venture funding	$1,000,000	
$5 million of initial venture funding	$5,000,000	

Personal compensation		
$40,000 in personal compensation during your first year	$40,000	Range of initial starting salaries in a typical US business school (http://www.businessweek.com)
$90,000 in personal compensation during your first year	$90,000	
$200,000 in personal compensation during your first year	$200,000	
Office space		
6 months of free office space (sufficient for the needs of the venture)	$3,300	The federal benchmark for average workspace per person is 218 sq. ft. (http://www.gsa.gov/graphics/ogp/Workspace_Utilization_Banchmark_July_2012.pdf) but it varies by industry between 150 and 300 sq. ft. We estimated that average office space for at least 2 people would be 500 square feet of start-up (class B) office space and calculated the cost as $550 per month (MIT Center for Research 2010).
1 year of free office space (sufficient for the needs of the venture)	$6,600	
3 years of free office space (sufficient for the needs of the venture)	$19,800	
Support		
A reliable supplier that can deliver to your specifications	$0	Only mentor and entrepreneur network have costs associated with provision. For an experienced mentor, which we estimated at an hourly rate of $200 per hour and an intervention of 100 hours. An entrepreneur network run by the local chamber of commerce: we estimated it at $7,500 based on cost divided by number of attendees (Sources: annual reports of entrepreneurial networks)
Your spouse's/family's encouragement	$0	
An experienced mentor to help you with things you do not know	$20,000	
A colleague within a client firm interested in co-developing an offering with you	$0	
An entrepreneur network run by the local chamber of commerce	$7,500	
Health insurance		
1 month of health coverage	$98	Basic student health insurance plans cost approx. $98 per month (Sources: compared health care premiums for student health care plans online)
6 months of health coverage	$586	
1 year of health coverage	$1,172	
3 years of health coverage	$3,516	
Future employment		
I had a job offer which would be waiting for me if the venture doesn't work	$61,104	Average unemployment duration in the US is 27 weeks (http://www.bls.gov/opub/ils/summary_11_01/unemployed_jobs_quit.) -We calculate future employment guarantees as the opportunity costs of lost salary for 27 weeks = $61,104 (mean MBA starting salary for the schools in our sample is $117,682) - The cost to provide unemployment benefits is 30% of the salary for a maximum of 26 weeks = $21,998
I would have a guarantee of a job offer at an appropriate level for me if the venture doesn't work	$61,104	
I would find my own next job if the venture doesn't work	$21,998	

Funding source		
Initial funding comes from a large firm (you help them to commercialize their technology)	$0	
Initial funding comes from a bank (a loan to be repaid with interest)	$0	no cost to provide
Initial funding comes from a client that pre-orders (in exchange for 30% ownership in the venture)	$0	
Initial funding comes from an investment fund (in exchange for 30% ownership in the venture)	$0	

Notes: Across resource comparisons are relative to levels in that resource. For example, $4.9 million of initial venture funding (which is $5 million initial venture funding – $100,000 initial venture funding) has a utility of 115.29. This is comparable to another resource such as $160,000 of personal compensation ($200,000 personal compensation minus $40,000 of personal compensation) which has a utility of 101.44. However, the utility of $5 million initial venture funding is not comparable directly to $200,000 in personal compensation.

Individual regression Because not all our subjects achieved a 100% likelihood based on (at least) one of the presented baskets, we used a logarithmic regression model to estimate, for each subject, the monetary value of resources necessary to achieve a likelihood level of 100% of moving from labor market to entrepreneurship. The logistic regression, conducted for each individual in the sample, generates the slope and intercept for the cost and likelihood value associated with each resource in each of the three baskets presented to each subject and, from those coefficients, estimated the cost associated with achieving 100% likelihood in each subject's case, using the formula:

$$\sum_{r=1}^{r=3}\left(\text{Intercept}\,(\mathrm{r_i}) \times \text{Slope}\,(\mathrm{r_i})^{100}\right)$$

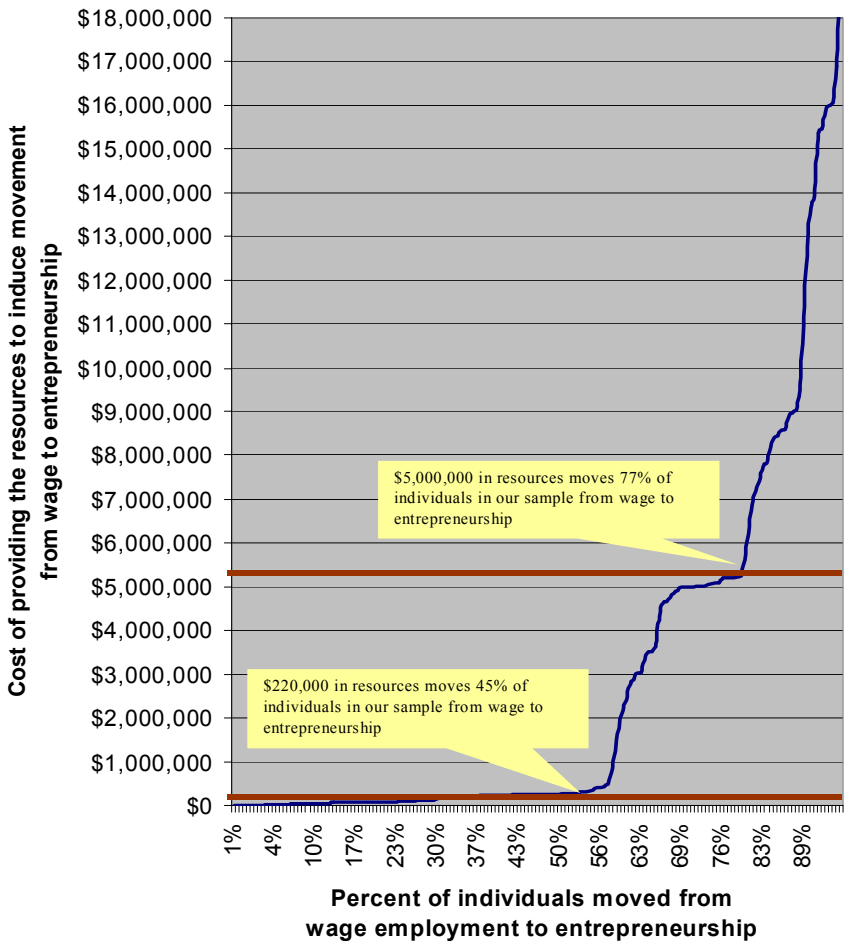
Where r = resource included in basket.

Our results provide, for each resource, an estimated level of each resource that would be required in order for that individual to report a 100% intention in entering entrepreneurship. We validated our estimations using the (holdout) 54% of the sample that achieved 100% likelihood of entry based on at least one of the three resource baskets described in the previous paragraphs. For these subjects, we calculated actual costs to provide the basket of resources that generated 100% likelihood. We then compared our estimated costs from the logistic regression above with the actual costs. The difference on average was only 7%, confirming the validity of our estimation procedure. In determining in each case where there

was a difference between reported and estimated, we took a conservative approach and used the lower of the two.

Market Model The resulting shape of the market for entrepreneurs is depicted graphically in Figure 3. For the subject pool in our study, the mean cost of moving a given individual into the market for entrepreneurs is $3,241,611, but the median is $261,351. For about $220,000 in policy incentives, 45% of subjects can be moved into entrepreneurship. It takes between $220,000 and $5 million to move another 32% of the subjects into entrepreneurship. Thereafter costs become exponentially larger.

Figure 3. Distribution of the Market for Entrepreneurs



In order to determine the resource efficiency of each level in moving an individual from wage to self-employment, we compute the cost of each resource per likelihood unit (out of a total of 100 units) by dividing each cost by 100. We

average this measure of "cost/point of movement from employment to entrepreneurship" across our sample and present the results in Table 5.

Table 5 – Resource Efficiency: Cost of Per Point Movement from Employment to Entrepreneurship

Resource	Average Cost Per Point of Movement from Employment to Entrepreneurship	95% Confidence Interval
Funding	$87,348	$114,473 to $60,223
Personal compensation	$2,240	$2,449 to $2,032
Office space	$233	$264 to $203
Support	$0 (supplier)	$191 to $37
	$0 (spouse/family)	
	$355 (mentor)	
	$0 (colleague within a client firm)	
	N/A (chamber of commerce network)	
Health insurance	$95	$136 to $53
Future employment	$693 (job offer)	$778 to $635
	$797 (job offer at appropriate level)	
	$246 (find own job)	
Funding source	$0	$0 - $0

Comparing overall resources, funding (mean cost per point of movement from employment to entrepreneurship: $87,348) is the least efficient incentive in moving people into entrepreneurship. Health insurance (mean cost per point of movement from employment to entrepreneurship: $95) is the most efficient. Considering individual resource level comparisons, several of the elements of support, and all aspects of funding source, which cost nothing to provide from the perspective of a policy maker, are even more efficient, though perhaps more challenging to influence.

High/ Low robustness test In order to assess the degree to which our results were driven by the tails of our sample, we conducted a test of robustness by comparing the demographic and even the utility data from the top 20 most expensive individuals to move from wage work to entrepreneurship (the right hand tail of the graph in Figure 3) against the rest of the sample, and did the same for the 20 least expensive individuals. We found no significant demographic differences in our tests. In fact, we found no differences whatsoever between either of the tails and the rest of the sample. The only significant differences that emerged related to the utilities of different forms of support for the least expensive 20 individuals compared with the most expensive 20. The least expensive 20 individuals find significantly ($p < 0.05$) less utility from the support of a reliable supplier that can deliver, and significantly more ($p < 0.05$) utility from spouse/family

encouragement than their peers at the other end of the distribution. Beyond those findings, we found no other systematic differences in the distribution of our sample.

Limitations

Before concluding the presentation of our results, we point out some important limitations of the current investigation. Conjoint studies are inherently limited in scope and usually overly simplified due to respondents' time constraints in exploring all possible combinations of decision criteria. This issue is partially addressed by adaptive conjoint because it selects from a larger subset of decision criteria in the dynamic presentation of attributes and levels to each respondent. And though adaptive conjoint enables the simultaneous investigation of all the relevant policy levers we identified in our literature review, it is possible that attribute categories and levels used in the present study are incomplete. There may also be unmeasured variables that account for a meaningful part of the unexplained variance in the results. Finally, collecting data via any conjoint is hypothetical from respondents' point of view (Huber, Wittink, Johnson, & Miller, 1992). As always, these limitations point to possibilities for future research.

5. Discussion and Conclusion

We started this study with a two-part theoretical puzzle: Does a market exist for entrepreneurs that may be derived from the market for labor and, if it does, where does the boundary between these two markets lie? Further, we asked; how can policy be used most efficiently to influence the occupational choice decision of individuals? Linking the OC literature with the policy literatures and subjecting the result to empirical study, we identify and measure commonly used policy levers that enable movement between the labor market and the market for entrepreneurs. Findings from Table 5 show some incentives such as funding that policymakers have often favored (Arshed, Carter, & Mason, 2014) are less effective and more expensive than others that have been considered unattractive by policymakers, such as health care (Parker, 2007). Resources such as support and especially mentorship within this category of support proved remarkably effective in impacting entrepreneurial intention (consistent with some recent initiatives, e.g. Startup Britain offers advice and support to entrepreneurs).

Taken together, our findings indicate that the relationship between decision criteria at the individual level and policy incentives that seek to influence those criteria might be more nuanced than originally assumed. While incentives like funding may be attractive to the individual, they may not be the most efficient incentives from the point of view of the policy maker. Resources such as mentorship or three years of office space that are equally attractive to would-be entrepreneurs can be provided at much lower cost and therefore should be more

attractive to (rational) policymakers. This gives policy makers more levers for inducing entrepreneurship. Specific to our method, the adaptive conjoint method employed in this study also provides a tool for policy makers to test the usefulness and efficiency of a resource when they choose to introduce new (entrepreneurship) policies.

More broadly, our analyses indicate a market for entrepreneurs, but a diminishing marginal return to manipulating entry into this market. Subject to significant individual variation, there exists a price at which every individual can be induced to be an entrepreneur. Policy makers might well exploit this variation, as though it can be very expensive to convert some individuals into entrepreneurs, there are other individuals who will choose to be entrepreneurs irrespective of the kind of resources/ incentives available, thereby making it (almost) costless to induce entry by those individuals. Thus, governments can scale incentives to move individuals from the labor market to the market for entrepreneurs based on their willingness to pay for higher levels of entrepreneurship in the economy.

Finally, the shape of the curve demarcating the market for entrepreneurs (Figure 3) is theoretically interesting. There are two inflection points in the curve as seen from our post-hoc analysis. Individuals below the first inflection point can be moved into the market for entrepreneurs for less than $220,000. However, people above the second inflection point require more than $5,000,000 dollars to move into the market for entrepreneurs. We speculate that people below the first inflection point would probably not require policy incentives to become an entrepreneur. At the same time, it might be too expensive for any policy incentives to influence individuals above the second inflection point. We conclude that the area bounded by these two inflection points may form the zone of influence of policy incentives. In other words, while the lower inflection point is porous, the upper inflection point forms and impermeable boundary between the labor market and the market for entrepreneurs. This (practically) impermeable boundary points to a (theoretically) important set of individuals who appear to refuse to bear the uncertainty of entrepreneurship at any cost.

References:

Acs, Z., Åstebro, T., Audretsch, D. B. and Robinson, D. T. (2016), "Public policy to promote entrepreneurship: A call to arms", *Small Business Economics, 47*(1): p 35-51.

Acs, Z., Parsons, W. and Tracy, S. (2008), "High impact firms: Gazelles revisited", *Small Business Research Summary, 328*. Retrieved from www.sba.gov/advo/research

Agarwal, M. (1988), "An empirical comparison of traditional conjoint and adaptive conjoint analysis", Working Paper No. 88-140, School of Management SUNY Binghamton.

Amit, R., Muller, E. and Cockburn, I. (1995), "Opportunity costs and entrepreneurial activity", *Journal of Business Venturing, 10*(2): p 95-106.

Anna, A. L., Chandler, G. N., Jansen, E. and Mero, N. P. (2000), "Women business owners in traditional and non-traditional industries", *Journal of Business Venturing, 15*(3): p 279-303.

Archak, N., Ghose, A. and Ipeirotis, P. G. (2011), "Deriving the pricing power of product features by mining consumer reviews", *Management Science, 57*(8): p 1485-1509.

Arshed, N., Carter, S. and Mason, C. (2014), "The ineffectiveness of entrepreneurship policy: Is policy formulation to blame?", *Small Business Economics, 43*(3): p 639-659.

Åstebro, T. (2017), "The private financial gains to entrepreneurship: Is it a good use of public money to encourage individuals to become entrepreneurs?", *Small Business Economics, 48*(2): p 323-329.

Åstebro, T. and Chen, J. (2013), "The entrepreneurial earnings puzzle: Mismeasurement or real?", *Journal of Business Venturing, 29*(1): p 88-105.

Åstebro, T., Chen, J. and Thompson, P. (2011), "Stars and misfits: Self-employment and labor market frictions", *Management Science, 57*(11): p 1999-2017.

Audretsch, D. B., Grilo, I. and Thurik, A. R. (2007), *Handbook of Research on Entrepreneurship Policy*. Northampton, MA: Edward Elgar Publishing.

Audretsch, D. B., Heger, D. and Veith, T. (2015), "Infrastructure and entrepreneurship", *Small Business Economics, 44*(2): p 219-230.

Auerbach, A. J. and Gorodnichenko, Y. (2012), "Measuring the output responses to fiscal policy", *American Economic Journal: Economic Policy, 4*(2): p 1-27.

Auerswald, P. E. (2007), "The simple economics of technology entrepreneurship: Market failure reconsidered", In D. Audretsch, I. Grilo and R. Thurik (Eds.), *Handbook of Research on Entrepreneurship Policy* (pp. 18–35), Northampton, MA: Edward Elgar Publishing.

Baliamoune-Lutz, M. and Garello, P. (2011), "Tax structure and entrepreneurship", *Small Business Economics*, *42*(1): p 165-190.

Banerjee, A. V. and Newman, A. F. (1993), "Occupational choice and the process of development", *Journal of Political Economy, 101*(2): p 274-298.

Belloni, A., Lovett, M. J., Boulding, W. and Staelin, R. (2012), "Optimal Admission and Scholarship Decisions: Choosing Customized Marketing Offers to Attract a Desirable Mix of Customers", *Marketing Science, 31*(4): p 621-636.

Benz, M., and Frey, B. S. (2008), "The value of doing what you like: Evidence from the self-employed in 23 countries", *Journal of Economic Behavior & Organization, 68*(3-4): p 445-455.

Bishop, W. S., Graham, J. L. and Jones, M. H. (1984), "Volatility of derived demand in industrial markets and its management implications", *The Journal of Marketing, 48*(4): p 95-103.

Blanchflower, D. G. and Oswald, A. J. (1998), "What makes an entrepreneur?", *Journal of Labor Economics, 16*(1): p 26-60.

Bradlow, E. T. (2005), "Current issues and a 'wish list' for conjoint analysis", *Applied Stochastic Models in Business and Industry, 21*(4-5): p 319-323.

Bresnahan, T. F. (1986), "Measuring the spillovers from technical advance: Mainframe computers in financial services", *The American Economic Review, 76*(4): p 742-755.

Brock, W. A. and Evans, D. S. (1989), "Small business economics", *Small Business Economics, 1*(1): 7–20.

Brown, R., Mawson, S. and Mason, C. (2017), "Myth-busting and entrepreneurship policy: The case of high growth firms", *Entrepreneurship & Regional Development, 29*(5-6): p 414-443.

Bruce, D. (2000), "Effects of the United States tax system on transitions into self-employment", *Labour Economics, 7*(5): p 545-574.

Bruce, D. and Mohsin, M. (2006), "Tax policy and entrepreneurship: New time series evidence", *Small Business Economics, 26*(5): p 409-425.
Burke, A. E., FitzRoy, F. R. and Nolan, M. A. (2000), "When less is more: Distinguishing between entrepreneurial choice and performance", *Oxford Bulletin of Economics and Statistics, 62*(5): p 565-587.
Burton, M. D., Sørensen, J. B. and Dobrev, S. D. (2016), "A careers perspective on entrepreneurship", *Entrepreneurship Theory and Practice, 40*(2): p 237-247.
Busenitz, L. W. and Barney, J. B. (1997), "Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making", *Journal of Business Venturing, 12*(1): p 9-30.
Butler, I., Galassi, G. and Ruffo, H. (2016), "Public funding for startups in Argentina: an impact evaluation", *Small Business Economics, 46*(2): p 295-309.
Capps, C., Dranove, D. and Satterthwaite, M. (2003), "Competition and market power in option demand markets", *RAND Journal of Economics*, *34*(4): p 737-763.
Carree, M., Van Stel, A., Thurik, R. and Wennekers, S. (2002), "Economic development and business ownership: an analysis using data of 23 OECD countries in the period 1976–1996", *Small Business Economics, 19*(3): p 271-290.
Carree, M. A. and Thurik, A. R. (2003), "The impact of entrepreneurship on economic growth", In: Z.J. Acs and D.B. Audretsch (Eds.), *Handbook of Entrepreneurship Research*, pp. 437-471, Boston, MA: Springer.
Clark, J. M. (1917), "Business acceleration and the law of demand: A technical factor in economic cycles", *The Journal of Political Economy*, *25*(3): p 217-235.
Cowling, M., Liu, W., Minniti, M. and Zhang, N. (2016), "UK credit and discouragement during the GFC", *Small Business Economics, 47*(4): p 1049-1074.
Cramer, J. S., Hartog, J., Jonker, N. and Van Praag, C. M. (2002), "Low risk aversion encourages the choice for entrepreneurship: An empirical test of a truism", *Journal of Economic Behavior & Organization, 48*(1): p 29-36.
Cressy, R. (1996), "Are business start-ups debt-rationed?", *The Economic Journal, 106*(438): p 1253-1270.
Dobson, G. and Kalish, S. (1993), "Heuristics for pricing and positioning a product-line using conjoint and cost data", *Management Science, 39*(2): p 160-175.
Douglas, E. J. and Shepherd, D. A. (2000), "Entrepreneurship as a utility maximizing response", *Journal of Business Venturing, 15*(3): p 231-251.
Earle, J. S. and Sakova, Z. (2000), "Business start-ups or disguised unemployment? Evidence on the character of self-employment from transition economies", *Labour Economics, 7*(5): p 575-601.
Elul, R. and Gottardi, P. (2015), "Bankruptcy: Is It Enough to Forgive or Must We Also Forget?", *American Economic Journal: Microeconomics, 7*(4): p 294-338.
Evans, D. S. and Jovanovic, B. (1989), "An estimated model of entrepreneurial choice under liquidity constraints", *The Journal of Political Economy, 97*(4): p 808-827.
Evans, D. S. and Leighton, L. S. (1989), "The determinants of changes in U.S. self-employment, 1968–1987", *Small Business Economics, 1*(2): p 111–119.
Fairlie, R. W., Kapur, K. and Gates, S. (2011), "Is employer-based health insurance a barrier to entrepreneurship?", *Journal of Health Economics, 30*(1): p 146-162.
Fiet, J. O. (2001), "The pedagogical side of entrepreneurship theory", *Journal of Business Venturing, 16*(2): p 101-117.
Figueroa-Armijos, M. and Johnson, T. G. (2016), "Entrepreneurship policy and economic growth: Solution or delusion? Evidence from a state initiative", *Small Business Economics, 47*(4): p 1033-1047.
Finkbeiner, C. T. and Platz, P. J. (1986), "Computerized versus paper and pencil methods: A comparison study". Paper presented at the Association for Consumer Research Conference, Toronto (October).
Folta, T. B., Delmar, F. and Wennberg, K. (2010), "Hybrid entrepreneurship", *Management Science, 56*(2): p 253-269.

Foss, L., Henry, C., Ahl, H. and Mikalsen, G. H. (2018), "Women's entrepreneurship policy research: A 30-year review of the evidence", *Small Business Economics*, First Online 01 March 2018, print publication forthcoming.

Gentry, W. M. and Hubbard, R. G. (2000), "Tax policy and entrepreneurial entry", *The American Economic Review, 90*(2): p 283-287.

Gilbert, B. A., Audretsch, D. B. and McDougall, P. P. (2004), "The emergence of entrepreneurship policy", *Small Business Economics, 22*(3): p 313-323.

Ginzberg, E., Ginsburg, S., Axelrad, S. and Herma, J. (1951), *Occupational Choice: An Approach to a General Theory*, New York: Columbia University Press.

Green, P. E., Krieger, A. M. and Wind, Y. (2001), "Thirty years of conjoint analysis: Reflections and prospects", *Interfaces, 31*(3_supplement): p S56-S73.

Green, P. E. and Rao, V. R. (1971), "Conjoint measurement for quantifying judgemental data", *Journal of Marketing Research, 8*(3): p 355–363.

Green, P. E. and Srinivasan, V. (1990), "Conjoint analysis in marketing: New developments with implications for research and practice", *Journal of Marketing, 54*(4): p 3–19.

Gronau, R. (1971), "Information and frictional unemployment", *The American Economic Review*, *61*(3): p 290-301.

Gumus, G. and Regan, T. (2009), "Self-employment and the role of health insurance", Working paper, accessed online at SSRN, November 2018.

Gustafsson, A., Herrmann, A. and Huber, F. (2007), *Conjoint Measurement: Methods and Applications*, New York: Springer.

Haltiwanger, J., Jarmin, R. S. and Miranda, J. (2013), "Who creates jobs? Small versus large versus young", *Review of Economics and Statistics, 95*(2): p 347-361.

Hart, D. M. (Ed.) (2003), *The Emergence of Entrepreneurship Policy: Governance, Start-ups, and Growth in the US Knowledge Economy*, New York: Cambridge University Press.

Henrekson, M. and Roine, J. (2007), "Promoting entrepreneurship in the welfare state", in D. Audretsch, I. Grilo and R. Thurik (Eds.), *Handbook of Research on Entrepreneurship Policy* (pp. 64–93), Northampton, MA: Edward Elgar Publishing.

Hoffmann, A. N. (2007), "A rough guide to entrepreneurship policy", in D. Audretsch, I. Grilo and R. Thurik (Eds.), *Handbook of Research on Entrepreneurship Policy* (pp. 140–171), Northampton, MA: Edward Elgar Publishing.

Hofstede, F. T., Kim, Y. and Wedel, M. (2002), "Bayesian prediction in hybrid conjoint analysis", *Journal of Marketing Research, 39*(2): p 253-261.

Holmes, T. J. and Schmitz Jr, J. A. (1990), "A theory of entrepreneurship and its application to the study of business transfers", *Journal of Political Economy*, *98*(2): p 265-294.

Holtz-Eakin, D. (2000), "Public policy toward entrepreneurship", *Small Business Economics, 15*(4): p 283–291.

Holtz-Eakin, D., Penrod, J. R. and Rosen, H. S. (1996), "Health insurance and the supply of entrepreneurs", *Journal of Public Economics, 62*(1-2): p 209–235.

Huber, J., Wittink, D. R., Johnson, R. M. and Miller, R. (1992), "Learning effects in preference tasks: Choice-based versus standard conjoint". Paper presented at the Sawtooth Software Conference.

Janney, J. J. and Dess, G. G. (2006), "The risk concept for entrepreneurs reconsidered: New challenges to the conventional wisdom", *Journal of Business Venturing, 21*(3): p 385-400.

Johnson, R. (1987), "Adaptive Conjoint Analysis". Paper presented at the Sawtooth Software Conference on Perceptual Mapping, Conjoint Analysis, and Computer Interviewing, Ketchum, ID.

Johnson, R. M. (1991), "Comment on "Adaptive Conjoint Analysis: Some Caveats and Suggestions" ", *Journal of Marketing Research, 28*(2): p 223-225.

Johnson, R. (2007), *ACA Technical Paper*. Retrieved from www.sawtoothsoftware.com, August 2017.

Kher, R., Streeter, D.H. and Just, D.R. (2012), "The "good job" trap: Opportunity cost as a deterrent to immediate venture creation", *International Review of Entrepreneurship*, *10*(4): p 127-152.

Kihlstrom, R. E. and Laffont, J. J. (1979), "A general equilibrium entrepreneurial theory of firm formation based on risk aversion", *The Journal of Political Economy*, *87*(4): p 719-748.

Killeen, P. R. (2009), "An additive-utility model of delay discounting", *Psychological Review, 116*(3): p 602-619.
Kim, P. H., Aldrich, H. E. and Keister, L. A. (2006), "Access (not) denied: The impact of financial, human, and cultural capital on entrepreneurial entryin the United States", *Small Business Economics, 27*(1): p 5-22.
Klyver, K., Nielsen, S. L. and Evald, M. R. (2012), "Women's self-employment: An act of institutional (dis) integration? A multilevel, cross-country study", *Journal of Business Venturing, 28*(4): p 474-488.
Kraus, A. B., Lien, D. S. and Orme, B. K. (2003), "The Navy Survey on Reenlistment and Quality of Service: Using Choice-Based Conjoint To Quantify Relative Preferences for Pay and Nonpay Aspects of Naval Service". Retrieved from https://apps.dtic.mil, August 2017.
Lazear, E. P. (2005), "Entrepreneurship", *Journal of Labor Economics, 23*(4): p 649-680. Kuhn, P. (2000), "Editor's note", *Labour Economics, 7*(5): p 463–469.
Lee, S.-H., Peng, M. W. and Barney, J. B. (2007), "Bankruptcy law and entrepreneurship development: A real options perspective", *Academy of Management Review, 32*(1): p 257-272.
Levesque, M., Shepherd, D. A. and Douglas, E. J. (2002), "Employment or self-employment: A dynamic utility-maximizing model", *Journal of Business Venturing, 17*(3): p 189-210.
Link, A. N. (2007), "Public policy and entrepreneurship", in D. Audretsch, I. Grilo and A. R. Thurik (Eds.), *Handbook of Research on Entrepreneurship Policy* (pp. 130–139), Northampton, MA: Edward Elgar Publishing.
Lohrke, F. T., Holloway, B. B. and Woolley, T. W. (2010), "Conjoint analysis in entrepreneurship research: A review and research agenda", *Organizational Research Methods, 13*(1): p 16–30.
Lundström, A. and Stevenson, L. (2002), *On the Road to Entrepreneurship Policy*. Swedish Foundation for Small Business Research [Forum för småföretagsforskning].
Marr, R. and Fliaster, A. (2003), *Jenseits der Ich AG*: Rainer Hampp Verlag.
Marshall, P. and Bradlow, E. T. (2002), "A unified approach to conjoint analysis models", *Journal of the American Statistical Association, 97*(459): p 674-682.
Martin, B. C., McNally, J. J. and Kay, M. J. (2013), "Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes", *Journal of Business Venturing, 28*(2): p 211-224.
Martínez-Fierro, S., Biedma-Ferrer, J. M. and Ruiz-Navarro, J. (2016), "Entrepreneurship and strategies for economic development", *Small Business Economics, 47*(4): p 835-851.
McCall, J. J. (1970), "Economics of information and job search", *The Quarterly Journal of Economics*, *84*(1): p 113-126.
Miner, J. B. and Raju, N. S. (2004), "Risk propensity differences between managers and entrepreneurs and between low- and high-growth entrepreneurs: A reply in a more conservative vein", *Journal of Applied Psychology, 89*(1): p 3–13.
Minniti, M. (2008), "The role of government policy on entrepreneurial activity: Productive, unproductive, or destructive?", *Entrepreneurship Theory and Practice, 32*(5): p 779-790.
Minniti, M. and Lévesque, M. (2008), "Recent developments in the economics of entrepreneurship", *Journal of Business Venturing, 23*(6): p 603-612.
Monsen, E., Patzelt, H. and Saxton, T. (2010), "Beyond simple utility: Incentive design and trade-offs for corporate employee-entrepreneurs", *Entrepreneurship Theory and Practice, 34*(1): p 105–130.
O'Connor, A. (2012), "A conceptual framework for entrepreneurship education policy: Meeting government and economic purposes", *Journal of Business Venturing, 28*(4): p 546-563.
OECD (1998), *The OECD Jobs Strategy Fostering Entrepreneurship*. Paris: OECD.
OECD (2001), *Science, Technology and Industry Outlook - Drivers of Growth: Information Technology, Innovation and Entrepreneurship*. Paris: OECD.
OECD (2003), *Entrepreneurship and Local Economic Development Programme and Policy Recommendations*. Paris: OECD.
OECD (2005a), *Micro-policies for Growth and Productivity*. Paris: OECD.
OECD (2005b), *SME Outlook*. Paris: OECD.
Orme, B. (2001), "Assessing the monetary value of attribute levels with conjoint analysis: Warnings and suggestions", in *Sawtooth Solutions Customer Newsletter (Spring),* Sawtooth Software Inc., Sequim, WA.

Orme, B. (2006), *Getting started with conjoint analysis: Strategies for product design and pricing research.* Research Publishers LLC.

Parker, S. C. (2007), "Policymakers beware!", in D. Audretsch, I. Grilo and A. R. Thurik (Eds.), *Handbook of Research on Entrepreneurship Policy* (pp. 54-63), Northampton, MA: Edward Elgar Publishing.

Parker, S. C. (2009). "Why do small firms produce the entrepreneurs?", *The Journal of Socio-Economics, 38*(3): p 484-494.

Parker, S. C. and Gartner, W. B. (2004), "Introduction", *Entrepreneurship Theory and Practice, 28*(5): p 413-417.

Reynolds, P. D., Carter, N. M., Gartner, W. and Greene, P. G. (2004), "The prevalence of nascent entrepreneurs in the United States: Evidence from the panel study of entrepreneurial dynamics", *Small Business Economics, 23*(4): p 263–284.

Rostamkalaei, A. and Freel, M. (2016), "The cost of growth: small firms and the pricing of bank loans", *Small Business Economics, 46*(2): p 255-272.

Rotger, G. P., Gørtz, M. and Storey, D. J. (2012), "Assessing the effectiveness of guided preparation for new venture creation and performance: Theory and practice", *Journal of Business Venturing, 27*(4): p 506-521.

Sawtooth Software, I. (2007), "The ACA/Web v6.0 Technical Paper", *Sawtooth Software Research Paper Series*. Retrieved from http://www.sawtoothsoftware.com/download/techpap/acatech.pdf, August 2017.

Shane, S. and Venkataraman, S. (2000), "The promise of entrepreneurship as a field of research", *Academy of Management Review, 25*(1): p 217-226.

Shepherd, D. A. and Zacharakis, A. (2008), "Conjoint analysis: A window of opportunity for entrepreneurship research", in J. Katz (Ed.), *Advances in Entrepreneurship, Firm Emergence and Growth III* (pp. 203–248), Greenwich, CT: JAI Press.

Siegel, D. S. (2007), "Quantitative and qualitative studies of university technology transfer: Synthesis and policy recommendations", in D. Audretsch, I. Grilo and A. R. Thurik (Eds.), *Handbook of Research on Entrepreneurship Policy* (pp. 186–199), Northampton, MA: Edward Elgar Publishing.

Simon, M. and Houghton, S. M. (2003), "The relationship between overconfidence and the introduction of risky products: Evidence from a field study", *Academy of Management Journal, 46*(2): p 139-149.

Stevenson, L. and Lundstrom, A. (2007), "Dressing the emperor: The fabric of entrepreneurship policy", in D. Audretsch, I. Grilo and A. R. Thurik (Eds.), *Handbook of Research on Entrepreneurship Policy* (pp. 94–129), Northampton, MA: Edward Elgar Publishing.

Stevenson, L. and Lundström, A. (2001), *Patterns and Trends in Entrepreneurship/SME Policy and Practice in Ten Economies* (Vol. 3), Stockholm: Elanders Gotab.

Storey, D. J. (1991), "The birth of new firms – does unemployment matter? A review of the evidence", *Small Business Economics, 3*(3): p 167-178.

Teichert, T. and Shehu, E. (2010), "Investigating research streams of conjoint analysis: A bibliometric study", *Business Research, 3*(1): p 49-68.

Toubia, O., Hauser, J. and Garcia, R. (2007), "Probabilistic polyhedral methods for adaptive choice-based conjoint analysis: Theory and application", *Marketing Science, 26*(5): p 596-610.

Toubia, O., Simester, D. I., Hauser, J. R. and Dahan, E. (2003), "Fast polyhedral adaptive conjoint estimation", *Marketing Science, 22*(3): p 273-303.

Vaile, R. D., Grether, E. T. and Cox, R. (1952), *Marketing in the American Economy*. New York: Ronald.

Van der Kuip, I. and Verheul, I. (2003), "Early development of entrepreneurial qualities: The role of initial education", *International Journal of Entrepreneurship Education, 2*(2): p 203–226.

Wennekers, S., Van Stel, A., Thurik, R. and Reynolds, P. (2005), "Nascent entrepreneurship and the level of economic development", *Small Business Economics, 24*(3): p 293-309.

Wessner, C. W. (2007), "Government programs to encourage innovation by start-ups and SMEs: The role of US innovation awards", in D. Audretsch, I. Grilo and A. R. Thurik (Eds.), *Handbook of Research on Entrepreneurship Policy* (pp. 172–185), Northampton, MA: Edward Elgar Publishing.

Wong, P. K., Ho, Y. P. and Autio, E. (2005), "Entrepreneurship, innovation and economic growth: Evidence from GEM data", *Small Business Economics, 24*(3): p 335-350.
Wu, B. and Knott, A. M. (2006), "Entrepreneurial risk and market entry", *Management Science, 52*(9): p 1315-1330.
Zhao, H., Seibert, S. E. and Hills, G. E. (2005), "The mediating role of self-efficacy in the development of entrepreneurial intentions" *Journal of Applied Psychology, 90*(6): p 1265-1272.

APPENDIX A: REVIEW OF ADAPTIVE CONJOINT METHOD

As conjoint has seen limited application in the entrepreneurship literature, we see an opportunity to offer an additional methodological contribution from our work. In order to do so, we offer a detailed review of the method, organized around the criteria which led us to select adaptive conjoint for our investigation. We include both the background of conjoint in general and specifically, adaptive conjoint. This section can be summarized by saying that we selected adaptive conjoint because; 1) conjoint in general offers an approach for revealing preferences and utilities that is well established in other disciplines, and 2) it is an appropriate method for researchers operating at the individual unit of analysis. Specifically, 3) *adaptive* conjoint enables the simultaneous consideration of a large number of attributes (variables), supporting well-specified models by addressing endogeneity issues. Finally, 4a) the logic engine that underlies adaptive conjoint offers a functional alternative to full-factor conjoint, and is 4b) recommended for investigations of six or more attributes, as adaptive conjoint produces results largely consistent with results of "full factor" (non-adaptive) conjoint, but with a reduced load on respondents. We expand on each of these points in the following paragraphs.

Established

Conjoint analysis was introduced by Green and Rao (1971) to offer a method of constructing sets of interrelated part-worth utilities based on individual preferences. Commonly known in marketing and new product development for applications in evaluating consumer product feature tradeoffs (from computers to automobiles), conjoint has also been used for sophisticated investigations of health maintenance plans, financial services and demand for new pharmaceuticals (Green et al., 2001). A study functionally similar to ours investigated individual preferences for re-enlistment in the US Navy, considering attributes that include duties, working space, health needs and compensation (Kraus et al., 2003).

Teichert and Shehu (2010) conducted a comprehensive bibliometric review of the use of conjoint analysis in the literature and identified 895 scholarly articles employing a conjoint method. Application of the method was identified in areas from economics (12.5% of studies) to healthcare sciences and policy (15.3% of

studies). Economics scholars have recently been attracted to the conjoint method because it offers a basis for evaluating the psychological trade-offs individuals make when evaluating several attributes together. Close to our context, conjoint analysis has been applied to 16 empirical investigations around entrepreneurship (Lohrke, Holloway, & Woolley, 2010), including one studying the likelihood of engaging in corporate entrepreneurship (Monsen, Patzelt, & Saxton, 2010). However, none of these studies have examined our specific research questions.

Individual Level of Analysis

Conjoint analysis allows us to deconstruct and measure an underlying set of diverse factors that deliver utility to an individual, where the relative importance of the factors may vary (Green et al., 2001). In addition to quantifying the value of different product features, conjoint analysis presents respondents with multiple decision scenarios from which researchers can mathematically model the utility (importance) of different attributes, addressing some of the introspective and self-reporting biases associated with direct survey methods (Shepherd & Zacharakis, 2008). As it relates to economic policy, we find conjoint highly complementary to methods which analyze the output responses to policy (Auerbach & Gorodnichenko, 2012) by offering insight into the front-end behavioral decisions which, when aggregated, generate macro outcomes to policy.

Large Number of Attributes

As conjoint gained adoption, the process of administering survey interviews has been refined, and some of its limitations have been addressed. Among these limitations, the issue of exponential instrument length as a function of attributes and levels has been consistently problematic (Bradlow, 2005). Instead of exhaustively presenting all possible combinations of attributes and levels to respondents, the adaptive conjoint process dynamically generates subsets of possible combinations of attributes and level questions to respondents based on their previous choices (Green & Srinivasan, 1990). Thus, the adaptive conjoint method enables researchers to examine more variables with fewer questions than full profile or choice-based conjoint methods (Johnson, 1987). As Archak, Ghose, and Ipeirotis (2011, p. 1487) put it:

> "Alternatively, one can use a simple conjoint analysis technique, in which a small set of attributes is used to create product profiles, and respondents are asked to directly rate these profiles. Because this approach does not scale well with the number of attributes, hybrid conjoint analysis techniques (Hofstede, Kim, & Wedel, 2002; Marshall & Bradlow, 2002), the fast polyhedral method (Toubia, Simester, Hauser, & Dahan, 2003), and the adaptive conjoint analysis (Johnson, 1987) have been proposed in the literature."

In an empirical study of 2,200 wine consumers in the US, Australia and NZ, Toubia, Hauser, and Garcia (2007) identify adaptive conjoint as a method

empirically useful in tackling complex decisions where a multitude of factors need to be considered simultaneously. Both these researchers and Belloni et al. (2012) specifically employed Sawtooth's adaptive conjoint software (Johnson, 1987; Johnson, 1991) to implement data collection through an adaptive conjoint survey interview. And a contemporary study technically similar to ours used adaptive conjoint to estimate the piecewise linear utility function of school administrators and faculty in admission and scholarship decisions along eight different financial and non-financial attributes, each with many levels (Belloni et al., 2012).

Underlying Logic of Adaptive Conjoint

Adaptive conjoint uses software to dynamically generate interview questions in order to optimize the number of queries presented to a respondent. This functionality enables treatment of more attributes with shorter interviews. We selected commercial software available from Sawtooth Software (Adaptive Conjoint Analysis version 5). Their implementation of adaptive conjoint starts a running calculation at the beginning of the interview survey, assigning an estimated rolling utility between question pairs subject to orthogonality and feature balance, in order to select the next question pair that will be presented to the respondent.

> "Accordingly, ACA presents pairs of concepts to the respondent that are as nearly equal as possible in estimated utility. At the same time, constraints are imposed to ensure that the overall design is nearly orthogonal. Within concepts, each pair of attributes is presented with equal frequency, and within each attribute, each pair of levels is presented with equal frequency. In addition, if the paired-comparison questions show only two attributes at a time, further steps are taken to ensure that the overall design is "connected." (Johnson, 2007, p. 9).

This is implemented according to the following equation:

$$(1) \quad \mathbf{bn+1} = \mathbf{bn} + \mathbf{v}\frac{r - \mathbf{z}'\,\mathbf{bn}}{\mathbf{1} + v'z}$$

Where:
$bn = (X'X)^{-1}(X'y)$
$bn+1 \sim = (X'X+z'z)^{-1}(X'y+zr)$
$v = (X'X)^{-1}z$
X is a matrix of predictor variables with a row for each of n observations.
y is a vector of responses in X for the first n observations.
z' is a row vector of predictor values for a new observation, appended as a row to X.
r is a response for the new observation.

Adaptive Conjoint Output Comparable with Full Factor Conjoint

There are mixed reports in the literature regarding equivalence in the output of adaptive compared with full factor conjoint methods. Empirical validation tests comparing the output of the two approaches against the same dataset have found that adaptive and full-factor return similar results (Finkbeiner & Platz, 1986). A few papers indicate that full factor "slightly" outperforms conjoint (Agarwal, 1988; Green & Srinivasan, 1990) and other studies find that adaptive conjoint outperforms full factor conjoint (Huber et al., 1992). Without designing and conducting a more sophisticated validation study to examine these mixed findings, we follow the recommendations summarized by leading scholars in the field (including those who have found adaptive conjoint to underperform compared to full factor conjoint) to be sure that 1) respondents represent real decision-makers, rather than sampling on convenience (Johnson, 2007), and 2) to use adaptive conjoint for studies involving six or more attributes (Green & Srinivasan, 1990).

Taken together, these factors led us to select adaptive conjoint analysis for this study. And in doing so, we see many other possible applications of the technique for investigations into studies relating to individual utilities and entrepreneurial decision making, and hope this summary might open the method to fellow researchers.

APPENDIX B: CONJOINT QUESTIONNAIRE

The variables and levels under each variable in the conjoint are as follows:

1. Personal Compensation: <Please rate each of these statements with regard to how they would make an entrepreneurial path more appealing than a corporate job in terms of> personal compensation during your first year:

$40,000
$90,000
$200,000

2. Health Insurance: <Please rate each of these statements with regard to how they would make an entrepreneurial path more appealing than a corporate job in terms of> free health insurance coverage:

1 month
6 months
1 year
3 years

3. Future Employment: <Please rate each of these statements with regard to how they would make an entrepreneurial path more appealing than a corporate job in terms of> future employment alternatives should you close your new venture:

I would have a guarantee of a job offer at an appropriate level for me if the venture doesn't work
I would find my own next job if the venture doesn't work

4. Office Space: <Please rate each of these statements with regard to how they would make an entrepreneurial path more appealing than a corporate job in terms of> free office space for your start-up:

6 months
1 year
3 years

5. Funding: <Please rate each of these statements with regard to how they would make an entrepreneurial path more appealing than a corporate job in terms of> seed funding for your start-up (separate from your own compensation):

$100,000
$1,000,000
$5,000,000

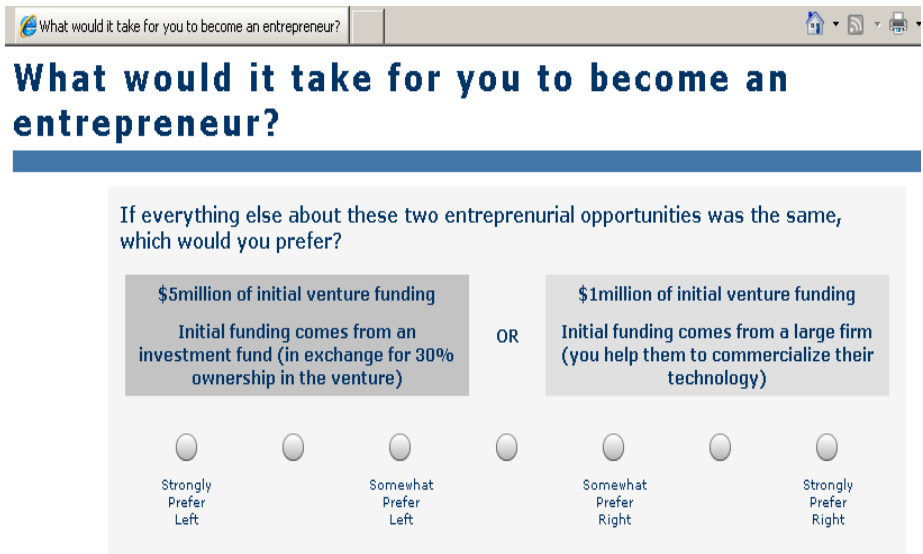
6. Funding Source: <Please rate each of these statements with regard to how they would make an entrepreneurial path more appealing than a corporate job in terms of> the source of seed funding for your start-up:

Initial funding comes from a large firm (you help them to commercialize their technology)
Initial funding comes from a bank (a loan to be repaid with interest);
Initial funding comes from a client that pre-orders (in exchange for 30% ownership in the venture
Initial funding comes from an investment fund (in exchange for 30% ownership in the venture)

7. Support: <Please rate each of these statements with regard to how they would make an entrepreneurial path more appealing than a corporate job in terms of> personal support for your start-up:

A reliable supplier that can deliver to your specifications
Your spouse's support/encouragement
An experienced mentor to help you with things you do not know
An entrepreneur network run by the local chamber of commerce
A colleague within a client firm interested in co-developing an offering with you

We used Sawtooth Software's ACA/Web Analysis package to conduct the on-line survey and calculate the utilities based on the participant's answers. Using the variables and levels listed above, the ACA software repeatedly presents each respondent two different set of options and then they are asked to indicate the degree to which they prefer one over the other. An example of the type of question that the participant sees is:



The ACA Sawtooth software adapts the later questions to the information gained from the earlier questions. If some variable level is clearly preferred or rejected early on in the questionnaire by the respondent, it will not be asked again. The later questions repeat paired comparisons of variable levels for which the respondent does not have a clear strong preference early on in order to understand their fine-grained preferences. After the interview, the Sawtooth software calculates the part-worth utilities for each level of each attribute.