WHAT DO WE REALLY KNOW ABOUT ENTREPRENEURS? AN ANALYSIS OF NASCENT ENTREPRENEURS IN INDIANA

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Abstract

A great deal of time and effort has been dedicated to entrepreneurship research regarding the characteristics of entrepreneurs. However, characteristics of entrepreneurs in the gestation period have received less attention due to the difficulty of obtaining data from potential entrepreneurs at this stage in the entrepreneurial process. The purpose of this study is twofold. First we review the literature to determine key characteristics of entrepreneurs. Then utilizing a sample of Indiana entrepreneurs in the gestation stage, we conduct an empirical analysis. In addition to the key components identified through the literature review, in the empirical analysis additional variables are considered that we believe will be major determinants of business start-up.

Keywords: Entrepreneurs, firm birth, start-ups

JEL Codes: J24, M13, M20

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Introduction

Over the past several decades, a great deal of emphasis has been placed on the importance of entrepreneurs as a way to stimulate economic growth. In response to this perceived importance, enormous effort has been dedicated to learning more about this mysterious creature – the entrepreneur. Typically studies have attempted to examine characteristics of entrepreneurs in an attempt to gain further insight into their successes and/or failures. In general, prior entrepreneurial research has focused on entrepreneurs in the infancy stage or beyond, tending to measure characteristics of entrepreneurs as they relate to the success or failure of the venture, where success is measured in terms of business survival or growth (Bailey, 1986; Cooper, Dunkelberg, and Woo 1988; Woo, Cooper, and Dunkelberg; Perry, 2001; Bosma et al.; etc.)

Unlike the majority of their predecessors in the entrepreneurship literature, Reynolds and White (1993; 1997) and Reynolds et al. (2004) focused their research on nascent, or emerging, entrepreneurs. Nascent entrepreneurs are those in the gestation stage of the entrepreneurial process, which indicates that they have in fact decided to start a business and are working to gather the resources, knowledge, etc. to do so. Through the Panel Study of Entrepreneurial Dynamics (PSED), Reynolds et al. (2004) have obtained interesting descriptions of entrepreneurs who are active in the gestation stage of the entrepreneurial process. What has yet to be accomplished regarding entrepreneurs in this stage, however, is to determine the relative impact of those characteristics on the entrepreneur transitioning from the gestation stage into firm birth (infancy). Also, unlike our study, the entrepreneurial literature does not include nascent entrepreneurs who want to start a business in a farm-related industry.

Our objective is twofold. First, we attempt to construct a brief literature review regarding the findings of the characteristics of entrepreneurs in general and compare them to the key characteristics of entrepreneurs in the gestation stage of entrepreneurship. Second, after determining consistent key characteristics of entrepreneurs via the literature review, we test new variables in addition to those of the tried-and-true variety in the empirical analysis. We isolate 101 Indiana entrepreneurs in the gestation stage of the entrepreneurial process, and through a print survey measure the relative impact of demographic, community characteristic, human capital, and financial capital variables. Results from this analysis contribute increased insight into the characteristics of entrepreneurs in the gestation stage, as well as the relative impact of factors affecting their ability to participate in a start-up.

Background

Entrepreneurs transition through several stages during the entrepreneurial process. A number of descriptions of venture creation sequences have been introduced throughout the literature (Vesper, 1980; Gartner, 1985; Bhave, 1994; Reynolds et al., 2004), which range from very broad

to focused representations. Gartner (1985) presents a fairly general approach in which he contends that new venture creation can be described across four dimensions, consisting of the individual(s), the environment, the organization, and the process.

Bhave (1994) presents a process model of entrepreneurial venture creation. In this process model three main stages are recognized: opportunity, technology set-up and organization creation, and exchange. Reynolds et al. (2004) like Bhave (1994) focus on three stages within the entrepreneurial process. Although the models by both Reynolds et al. and Bhave provide important insight, we focus on the more general model presented by Reynolds et al. (2004), since their approach allows for the entrepreneur to exit at any stage within the model. See Figure 1 for a diagram representing the entrepreneurial process detailed by Reynolds et al. (2004).

--Figure 1 Here—

The first stage in the Reynolds et al. (2004) model consists of the entire population of individuals from which entrepreneurs are identified. During the progression of this stage the first transition point, business conception, occurs. Conception serves as a signal for when the individual decides to start a business. The second stage in the entrepreneurial process, gestation, consists of activities associated with the start-up effort, such as gaining capital, building social networks, and/or business counseling. The transition point from gestation is known as firm birth, which leads to the final stage of the process—infancy. Infancy is known to be the riskiest stage of the entrepreneurial process and is estimated to last for approximately two years. At this stage it is imperative that the firm use the resources gained in the gestation period to its utmost advantage. Upon entering the infancy stage there are three possible outcomes: firm growth, survival, or termination (Reynolds et al., 2004).

Like the Reynolds et al. (2004) study, the empirical analysis in this study targets entrepreneurs approaching the firm birth transition point. Research on entrepreneurs in the gestation stage of the entrepreneurial process has been extremely limited because entrepreneurs in this stage of the process are very difficult and costly to identify.

Entrepreneur Demographics

Numerous studies have been conducted in an attempt to determine the characteristics of entrepreneurs using a wide variety of samples, performance measures, and methods. Such variance across studies often makes generalization and cross-comparison difficult. Cooper and Gimeno-Gascón (1992) review the literature in terms of common variables and/or elements that have appeared over time. They develop three main categories into which descriptions of entrepreneurs' and their ventures fall: the entrepreneur (demographics), processes of founding (idea formation and networking), and industry and environmental characteristics.

Demographic variables tend to be fairly consistent, covering many of the same factors across studies. The most commonly used demographic variables are: race, gender, and age. In terms of race, Cooper, Dunkelberg, and Woo (1988) determined that minority entrepreneurs started firms that were more likely to experience failure. Sexton and Robinson indicated that minority entrepreneurs were more likely to earn less, and Woo, Cooper, and Dunkelberg indicate minority

entrepreneurs launch businesses that are less likely to grow. Reynolds et al. (2004) found the prevalence rates of nascent entrepreneurs to be 50% higher for Blacks than for whites.

Gender is also an element that has sparked particular interest in the area of entrepreneurship (Denison and Alexander; Cooper, Woo, and Dunkelberg, 1988; Honig; Bosma et al.; Reynolds et al., 2004). Denison and Alexander, Cooper, Dunkleberg and Woo (1988), and Sexton and Robinson found that firms founded by females exhibited poorer performance than those founded by males. Bosma et al. found that male business founders performed better across the board in their ventures, while Reynolds et al. (2004) found that women account for only one-third of individuals involved in start-ups.

Surveys of entrepreneurs generally include data on the age of the entrepreneur at the time of business formation (Cooper and Gimeno-Gascón, 1992). Results from studies regarding age have been mixed. Brockhaus, Cooper, Dunkelberg and Woo (1988), and Denison and Alexander discovered that older entrepreneurs were more likely to survive or obtain higher income. Dunkelberg and Cooper (1982) found that older entrepreneurs were less likely to experience growth. In terms of less general age categories, several studies have found the majority of entrepreneurs to be between the ages of 25-40 (Cooper, 1973; Liles; Hisrich and Brush). Reynolds and White (1997) suggested that among the most active in entrepreneurship were young men ages 25-34. Bosma et al. found no affect for age, while Reynolds et al. (2004) found the highest prevalence rate among nascent entrepreneurs ranged from 25-54 years old.

Other demographic variables have been tested and may prove useful in the future to predict start-up and/or entrepreneurial success. Marital status is a variable that has received less consideration, but that may provide interesting results and insight. Reynolds et al. (2004) found that the differences related to marriage are small and varied, but their descriptive statistics reveal that married black women and single white men are significantly more likely to be involved in start-ups than others. Bosma et al. (2004) determined that entrepreneurs who had the emotional support of a spouse earn approximately 40% more than those who do not have such support.

The number of children residing within the household has also received relatively little consideration in entrepreneurship studies. Reynolds et al. (2004) found that in most cases there were no significant differences between having children and not having children and participating in nascent entrepreneurial activity. When differences did exist, however, individuals with children in the household were more likely to report involvement in a business start-up.

Human, Financial, and Social Capital

The majority of variables taken into consideration by Cooper and Gimeno-Gascón (1992) and across the literature in general fall into four broader categories: demographics, human capital, financial capital, and social capital. Demographic variables have been covered above, but variables such as education, social networks, financing, etc. tend to fall into capital categories in more recent literature. The entrepreneurship literature highlights three major factors of capital as essential elements of the entrepreneurial process: human capital, financial capital and social capital (Gimeno-Gascon et al.; Caputo and Dolinsky; Baron and Markman; Goetz and

Freshwater; Markman and Baron; Anderson and Miller; Bosma et al.; Lynskey; Lee, Florida, and Acs; Montgomery, Johnson, and Faisal). In an entrepreneurial context, human capital consists of the skills, experience and education an entrepreneur brings to the venture (Becker; Green and Haines). Financial capital includes the debt or equity funds an entrepreneur has available for venture start-up and social capital encompasses family members, social networks, connections, etc. that may provide useful resources for new business creation (Bourdieu; Baron and Markman).

Since human capital components are generally very accessible, many studies have been conducted to determine the impact of human capital factors on entrepreneurship (Cooper, Gimeno-Gascón, and Woo, 1994; Robinson and Sexton; Bates; Reynolds, 1997; Davidsson and Honig; Bosma et al.; Lynskey; Montgomery, Johnson, and Faisal). In particular, focus has been placed on industry experience and general human capital in determining the success of entrepreneurs in firm foundation (Cooper, Gimeno-Gascón, and Woo, 1994; Robinson and Sexton; Bates; Reynolds, 1997; Davidsson and Honig).

The importance of education as a form of human capital has been demonstrated in several studies, which have found that higher education levels generally indicate an increased likelihood of participation in firm foundation and demonstrate a significant impact on the performance of the new venture (Cooper and Dunkelberg, 1987; Cooper, Gimeno-Gascón, and Woo, 1994; Robinson and Sexton; Bates; Reynolds, 1997; Reynolds et al., 2004).

Although the results generally indicate that education as a general form of human capital is a relevant element of start-up participation, previous work experience has also been found to impact the process for venture creation (Stuart and Abetti, 1990; Cooper and Gimeno-Gascón, 1992; Cooper, Gimeno-Gascón, and Woo,1994; Gartner, Starr, and Bhat, 1998). To the contrary, however, Davidsson and Honig found that previous work experience was not a significant factor in predicting participation in a start-up or start-up success.

Although previous research has identified the importance of factors of capital, relatively little is known regarding the relative impact of these forms of capital on start-up participation. Studies within the entrepreneurship capital literature generally either explore only one or compare two of these three forms of capital. Montgomery, Johnson, and Faisal; Caputo and Dolinsky, and Goetz and Freshwater explore the relative importance of financial and human capital. Generally, human and financial capital have been found to positively affect entrepreneurs. The results from Goetz and Freshwater, however, indicate that there may be diminishing returns to financial capital when state governments use it to spur entrepreneurship. Some studies have also investigated the relative effects of human and social capital on entrepreneurs (Bosma et al.; Anderson and Miller; Davidsson and Honig). These studies highlight the importance of both human and social capital to firm founders. Davidsson and Honig, however, contend that social capital appears to be more crucial in determining the success of the entrepreneur.

Honig studied the influence of human, social, and financial capital on the profitability of 215 “informal” microenterprises in Jamaica. The research indicated that human, financial, and social capital all play significant roles in enhancing profitability. Despite the previously mentioned studies, a survey of the literature indicates that information regarding the relative effects of

human, financial, and social capital is limited, especially with respect to entrepreneurs in the gestation stage of the entrepreneurial process.

Data and Methods

Data

The data used in this analysis were collected through a print survey during small business development workshops hosted by either the Indiana Small Business Development Centers or Purdue University. Two hundred thirty-one Indiana entrepreneurs were contacted, and 101 agreed to participate in the two year study (January 2004-January 2006), yielding a response rate of approximately 44%. Table 1 displays the frequencies and percentages for the variables of interest obtained through the survey instrument.

--Table 1 Here--

The survey instrument used in this analysis targeted entrepreneurs in the gestation stage of the entrepreneurial process. We obtained data regarding personal demographics, community characteristics, human capital, financial capital and social capital. Thirty percent of the entrepreneurs participated in a business start-up within the past six months. Approximately 75% of the study participants were recruited from SBDC workshops; whereas, the remaining 25% attended a Purdue University workshop.

The data from our study indicates that the most active entrepreneurs (69%) are in the 26-44 year age range. This data is consistent with the samples of several other studies, which found the majority of entrepreneurs to be between the ages of 25-40 (Cooper, 1973; Liles; Hisrich and Brush) or 25-54 (Reynolds et al., 2004).

Approximately 61% of the respondents in the study are female and 39% are male. Of those participants involved in a start-up, approximately 77% are female and 23% are male. Seventy percent of the respondents are married. Approximately 45% of respondents have no children under the age of 18 residing in the household and 39% have 2 or more children under 18 living at home. Thirty-seven percent of entrepreneurs surveyed have at least some college, and 34% hold at least a bachelor's degree.

Approximately 30% have previous start-up experience. Reynolds and Miller (1990) report that less than 20% of the entrepreneurs in their sample had prior entrepreneurial experience. In contrast, however, Ronstadt found that 63% of current entrepreneurs and 40% of all former entrepreneurs in the sample had been involved in the creation of more than one venture. Our sample seems to fall mid-range in comparison to these previous studies.

Two variables involving community characteristics have not previously appeared in the entrepreneurship literature: presence of a major retail chain and perception of community's economic status. Only 9% do not have a major retail chain, such as a Wal-Mart, K-Mart, or Target, within their community. Approximately 9% of the entrepreneurs surveyed perceive their

community economic status as deteriorating, while the remaining 91% view their community economies as either stable (41%) or growing (50%).

Cooper and Dunkelberg (1987) and Shapero and Sokol found in their studies that 50% and 58% of entrepreneurs, respectively, had entrepreneurial parents. Approximately 43% of our study respondents indicated that either one or both of their parents were self-employed at some time. Of the entrepreneurs participating in a start-up, approximately 47% indicated having parents who are/were self-employed.

Model

A binomial logistic regression model was formulated to determine the relative impact of factors on an entrepreneur's participation in a small business start-up. The binomial logistic regression model is shown in (1).

$$\begin{aligned} & start^* = x\beta + \varepsilon \\ & \left\{ \begin{array}{l} start = start^* \text{ if } start^* > 0 \\ start = 0 \text{ otherwise} \end{array} \right\} \end{aligned} \tag{1}$$

The estimated model can be viewed in (2), where the dependent variable is whether or not an entrepreneur has participated in a business start-up, and α and β are estimated coefficients.

$$\begin{aligned} START^* = {} & \alpha + \beta_1 PU + \beta_2 FEM + \beta_3 AGE2 + \beta_4 BL + \beta_5 OT + \\ & \beta_6 SING + \beta_7 CHILD1 + \beta_8 CHILD2 + \beta_9 RETAIL + \beta_{10} SERVICE + \\ & \beta_{11} FARM + \beta_{12} CHAINY + \beta_{13} STABL + \beta_{14} DETER + \beta_{15} COLLEG + \\ & \beta_{16} BACH + \beta_{17} GRAD + \beta_{18} PSTARTY + \beta_{19} BPLANY + \beta_{20} NWLT50K \end{aligned} \tag{2}$$

Each entrepreneur surveyed has either participated in a business start-up within the past six months (*START* =1) or has not (*START* = 0). The independent variables are as follows: place of participation (*PU* = 1, *SBDC* = 0), gender (*FEM* = 1, *MALE* = 0), *AGE*, race (*BLACK*, *OTHER)*, marital status (*SING*=1, *MARR*=0), number of children under 18 residing in the household (*CHILD1, CHILD2*), industry of prospective business (*RETAIL, SERVICE*, *FARM*), presence of a major retail chain in the community *CHAINY*, economic state of the community (*GROW*, *STABL, DETER*), education level (*HIGH, COLLEG, BACH, GRAD*), previous start-up experience (*PSTARTY*), business plan attempt (*BPLANY*), and net worth of household (*NWLT50K* = 1, *NWGT50K* = 0).

Since this study is designed to target entrepreneurs in the gestation stage of the entrepreneurial process, STARTY, which indicates that an entrepreneur participated in a start-up within the past six months, was selected as the dependent variable. This indicates that all the participants who chose "Yes" to the start-up question were involved in the firm birth transition period of the entrepreneurial process. Due to the limited number of observations and the large number of

available variables, the independent variables used for the regression analysis were selected after the above review of the literature.

The demographic variables chosen for the analysis were location of participation, gender, age, race, marital status, number of children in the household under age 18, and industry of the new business. The two venues of participation were Purdue University (PU) and Small Business Development Center (SBDC) Workshops. Although the workshops have a similar function, the PU workshop is much more specialized, targeting individuals from the food industry and charging a participation fee; whereas, individuals attending SBDC workshops receive a free, much more general seminar on the process of business formation. Since entrepreneurs attending the Purdue workshop tend to be further along in the entrepreneurial process, we would expect PU to have a positive effect on participating in a start-up.

Gender is a much more common demographic variable in the entrepreneurship literature (Denison and Alexander; Cooper, Woo, and Dunkelberg, 1988; Honig; Bosma et al.; Reynolds et al., 2004). The purpose of including the gender variable in this study is simply to provide insight into any gender differences which may exist during the gestation period of the entrepreneurial process. In previous literature, being female yielded a negative effect on success; therefore, we would expect this variable to negatively affect start-up.

Age is an extremely common demographic factor in entrepreneurship studies with a long history (Cooper, 1973; Liles; Brockhaus; Dunkelberg and Cooper, 1982; Denison and Alexander; Hisrich and Brush; Cooper, Dunkelberg and Woo, 1988; Cragg and King; Reynolds and White, 1997; Bosma et al.; and Reynolds et al., 2004). The two age categories considered in this study are 18-44 years old and 45 and older, with 18-44 years serving as the reference. We would expect the age of 45 years and older to have a negative effect on start-up, due to the findings of previous studies.

We consider three race categories in this study: white, black (BL), and other (OT), with white serving as the reference. Cooper and Gimeno-Gascón (1992) recognized three studies that examined the relationship between entrepreneurs' race and firm performance (Cooper, Dunkelberg, and Woo, 1988; Sexton and Robinson; Woo, Cooper, and Dunkelberg). Reynolds et al. (2004) found the prevalence rates of nascent entrepreneurs to be 50% higher for blacks than for whites. Due to the more recent results of the Reynolds et al. (2004) study, we would expect being black (BL) to exhibit a positive effect on start-up.

Characteristics of the household, such as marital status and number of children residing at home have received limited consideration throughout the literature (Reynolds et al., 2004; Bosma et al.). The categories for number of children under age 18 residing in the household represent 0 children in the household and 1 child in the household. Due to the findings of Reynolds et al. (2004), we would expect 0 children to exhibit a negative effect and 1 child to produce a positive effect. From the findings of Bosma et al., we would expect single to have a negative effect on participation in a start-up. The reference for marital status is married and the reference for number of children in the household is two or more.

Several studies have attempted to measure differences of average performance of small start-ups across industries (Neiswander and Drollinger; Reynolds, 1987; Dunkelberg et al., 1987; Cooper, Dunkelberg and Woo, 1988; Hay and Ross; Reynolds and Miller, 1989). Results have been mixed, due to the testing of different industries. We will consider the service, retail, technology, and farm-related industries. The technology industry will serve as the reference for our analysis. From past studies (Cooper, Dunkelberg and Woo, 1988; Reynolds and Miller, 1989) we would expect the retail industry to have a negative effect on start-up and the service industry to have a positive effect. Due to high costs of entry, we would also expect the farm related industry to pose a negative effect.

Community characteristic variables were slightly more difficult to assess. It is intuitive that the state of the community in which the entrepreneur resides would have an impact on his/her decision to start a business. Two variables were tested within the model: presence of a major retail chain and perceived status of the community. The first variable indicates whether a major retail chain, such as Wal-Mart, Target, Meijer, etc. is present within the entrepreneur's community. Although this variable is new to this vein of the literature, previous studies have been conducted to assess the impact of entry of a major retail chain on the economic status of communities. Through a literature review, Martens found no studies that conclusively linked Wal-Mart to market concentration. In a study involving West Virginia counties, Hicks and Wilburn found that entrance of a Wal-Mart in a county, results in the creation of approximately fifteen new firms engaged in retail trade. Martens also found that in both high and low population density counties, when a supercenter and warehouse store enters the community, one or two small supermarkets enter the market.

Due to the above results, it is believed that the presence of a major retail chain may provide both a sufficient customer base and community infrastructure to support several other businesses as well. We also contend that an entrepreneur's perception of the status of his/her community may affect the decision to participate in a start-up effort. The survey instrument allowed for the entrepreneur to indicate whether he/she believes the community is growing, stable, or deteriorating. We anticipate a stable economic environment in the community to provide a positive effect on start-up, while a deteriorating economy would provide a negative effect on start-up.

Since human capital is a very accessible form of capital, many studies consider the impact of human capital on entrepreneurs. The human capital variables selected for the analysis were education, previous start-up experience, and an attempt to write a business plan. Education has been used as a proxy for general human capital throughout the entrepreneurship literature (Cooper, Dunkelberg, and Woo,1988; Cooper, Gimeno-Gascón, and Woo,1994; Robinson and Sexton; Bates; Reynolds 1997; Gimeno-Gascon et al.; Caputo and Dolinsky; Reynolds et al., 2004; Montgomery, Johnson, and Faisal). The results for education are somewhat mixed, but in general we would expect higher levels of education to have a positive effect on start-up.
Previous business start-up experience is also tested as a factor of human capital throughout the literature (Van de Ven, Hudson, and Schroeder; Doutriaux and Simyar; Sandberg and Hofer; Dunkelberg, Cooper, Woo, and Dennis, 1987; Reynolds and Miller, 1989; Stuart and Abetti, 1988; Chambers, Hart and Denison; Stuart and Abetti, 1990; Starr and Bygrave, 1992; Starr, Bygrave, and Tercanli, 1993; Gartner, Starr, and Bhat, 1998). The previous start-up variable has

received mixed results over the years, making it difficult to hypothesize a priori its effect on new venture success (Cooper and Gimeno-Gascon, 1992). We believe these mixed results merit further testing of this variable as it relates to firm birth.

The business plan creation variable represents the entrepreneur's attempt to increase human capital through planning. In the entrepreneurship literature human capital has been less represented by forms of planning, although increased planning has been found to have a positive impact on entrepreneurs (Perry). Rue and Ibrahim indicate that planning is a "key issue" for small business. Gibson and Cassar suggest that although some studies support a causal relationship between business planning and venture success, others are unable to show that such a relationship exists. From previous studies, which indicate that planning is key to success, we anticipate that an attempt to write a business plan will positively affect participation in a start-up.

The financial capital variables tested are net worth above and below $50,000. Net worth was selected as an independent variable to indicate the individual's overall wealth as a sign of his/her ability to access capital. This variable was previously used in two studies concerning entrepreneurs in the U.S. (Evans and Jovanovich, 1989; Evans and Leighton 1989). Georgellis and Wall also used net worth as a sign of liquidity constraint in a German study. Since net worth represents access to capital, we believe a net worth of $50,000 or less would negatively effect participation in a start-up.

Results and Discussion

The results for the logit start-up model can be found in Table 2. Seven personal demographics variables were selected as part of the model: location of study participation, gender, age, race, marital status, number of children within the household under the age of 18, and potential industry category of the business. Participation at a Purdue University workshop and female were positive and significant at the 5% level, while no children under the age of eighteen in the household was negative and significant at the 5% level. The farm-related industry variable was negative and significant at the 10% level.

--Table 2 Here--

Although the location of participation variable is new to the entrepreneurship literature, the positive and significant influence of participating in a Purdue University-sponsored workshop is not surprising. The Purdue workshops are more industry focused and require participants to pay a registration fee. Payment of the registration fee and attendance at a specialty workshop signals the entrepreneur's dedication to the potential business venture. From casual observation, the entrepreneurs attending the Small Business Development workshops were seeking more general information about starting a small business, and were not required to pay a registration fee.

The result that being female positively and significantly affects business start-up is a bit surprising when results from other literature regarding gender are taken into consideration. Denison and Alexander, Cooper, Dunkelberg, and Woo (1988) and Sexton and Robinson determined firms founded by females exhibited poorer performances than those founded by males. Reynolds et al. (2004) discovered that in general women are responsible for one-third of

start-ups. In the case of this study, however, women are more frequently involved in the entrepreneurial process, and are more likely to participate in a start-up.

Reynolds et al. (2004) found that in most cases there were no significant differences between having children and not having children and participating in nascent entrepreneurial activity. When differences did exist, however, individuals with children in the household were more likely to report involvement in a business start-up. Our results coincide with the descriptive analysis of the Reynolds et al. (2004) study. For entrepreneurs in Indiana, having no children in the household under age 18 negatively and significantly influences transitioning into firm birth.

Previous studies have considered the industry of the entrepreneur as an influencing characteristic of firm birth, but not in the same amount of detail as other demographic variables. We considered the service, retail, technology and farm-related industries. The farm-related industry has a significant influence on participating in a start-up at the 10% level. Its effect, however, is negative, indicating that attempting to start a business in the farm-related industry decreases the likelihood of participating in a start-up. Possibly this negative influence is due to the high capital costs associated with many farm-related industries, or perhaps entrepreneurs in the gestation stage seeking to establish a firm in the farm-related industry already have agricultural backgrounds, even though this may not be considered previous start-up experience by the entrepreneur. If this is true, which unfortunately we cannot measure, then entrepreneurs in farm-related industries may be able to more easily distinguish a poor business idea and exit the gestation stage before entering firm birth.

Presence of a major retail chain and perceived economic status of the community represented the community characteristics section of the survey. Having a major retail chain within the community was positive as expected, and was statistically significant at the 5% level. This result indicates that a community with sufficient infrastructure and customer base to support a major retail chain may also likely have sufficient infrastructure and consumers to support several other types of businesses. As the results of Martens and Hicks and Wilburn indicate, entry of a major retail chain can actually increase the number retail-related businesses within a community. This may also be indicative of a tendency for entrepreneurs to locate in less rural areas, which as we will discuss in the subsequent section, may provide merit for further research. The entrepreneur's perception of the economic status of his/her respective community was not statistically significant.

One of the human capital variables in the regression model was significant. Results indicate that the education variables *COLLEG, BACH,* and *GRAD* all had a positive effect on participation in a start-up, but only *GRAD* was statistically significant at the 10% level. The literature generally suggests that higher levels of education positively impact not only the likelihood of entrepreneurial behavior, but also the likelihood for success in the venture. Reynolds et al. (2004) suggest that higher levels of education are generally associated with higher prevalence rates for nascent entrepreneurs. Gimeno-Gascon et al. explored the effect of education as a representation of general human capital. Their study revealed that education had a positive effect on the economic performance of the firm, but was not statistically significant. They also found that entrepreneurs with bachelors or graduate degrees experienced significantly higher performances than entrepreneurs with a high school diploma or some college. In the same realm,

the results from Bosma et al. indicate that highly educated entrepreneurs earn greater profits in their ventures. To contrast, Montgomery, Johnson, and Faisal suggest that although increased amounts of education have a positive and significant effect on business start-up, the results do not reveal the same effect for the firm to remain in business. In fact, education had a negative effect on staying in business. Results from Stuart and Abetti (1990) indicate that advanced education beyond the bachelor's degree had a negative effect on performance. Although there are some mixed results regarding the relationship of education and venture performance, increased education generally appears to positively impact an entrepreneur's participation in a business start-up.

The financial capital variable net worth less than $50,000 was also positive and statistically significant at the 10% level. The net worth variable is intended to serve as an indicator of liquidity constraint. This result is a bit surprising, since Evans and Jovanovic (1989), Evans and Leighton (1989), and Georgellis and Wall indicate that a higher value of net worth increases his/her likelihood of entering the entrepreneurial process. More recently, Montgomery, Johnson, and Faisal found that personal assets have both a positive and significant effect on both participating in a start-up and keeping that start-up going. Given the results of previous studies, it is intuitive that access to more capital via assets would increase an entrepreneur's ability to participate in a start-up. Although this result is surprising, perhaps entrepreneurs in the gestation stage possessing lower net worth values are searching for outlets through which they can increase their income and/or net worth.

Conclusions, Implications and Further Research

The literature review reveals that many variables, especially those of a demographic nature, are consistent across entrepreneurship studies. However, as our variable selection and the empirical analysis have shown, both little used and new variables can still make valuable contributions regarding our knowledge of the characteristics of entrepreneurs. We surveyed 101 Indiana nascent entrepreneurs in the gestation stage of the entrepreneurial process and a logit analysis was conducted to find the determinants of entrepreneurs transitioning to firm birth. Comparing emerging entrepreneurs in Indiana to those in the larger sample of Reynolds et al. (2004) leads to interesting similarities and differences. For example, the female percentage of emerging entrepreneurs in Indiana is astounding, and perhaps is indicative of a trend in the U.S. Nationwide or other state-specific studies may yield valuable information as to whether this is occurring in other portions of the U.S. or is Indiana-specific.

None of the main-stream literature previous to this study has considered a farm-related industry category. The results of the study indicate that farm-related industries actually decrease the likelihood of transitioning from the gestation stage to firm birth. This may be due to the ability of those who are already in farm-related industries to acknowledge a poor business idea, or to the high capital costs of entering a farm-related industry. The negative and significant result certainly appears to merit further research. Research specifically focused on agricultural entrepreneurs would give a great deal of insight into to the characteristics specifically affecting entrepreneurs entering farm and agriculture-related industries.

The presence of a major retail chain variable also yields interesting results that may merit further testing in future analyses. This variable may serve as an easy to measure proxy for community infrastructure, and could have a wide variety of uses in other analyses. In future studies, the specificity of the variable, however, could be improved. For the purposes of our study, we simply asked if there was a major retail chain present in the entrepreneur's community. The term community may have a wide variety of meanings among entrepreneurs. For example, an entrepreneur in Indianapolis may consider his/her community the neighborhood in which he/she lives, while the community of a rural entrepreneur may span 30 or more miles, encompassing an entire county. Increased clarity may enhance the results of this variable for future use.

Results surrounding the net worth variable are a bit perplexing. We would expect a net worth of less than $50,000 to negatively affect start-up, since lower net worth values would likely serve as a constraint to financing. It is possible that entrepreneurs were confused by the net worth variable, and may have mistaken it for their yearly income. Although the two are very different, we could expect higher net worth values to be highly correlated with high income levels and vice versa. Incorporating income level into the print survey would have added a great deal of information to the finance variables, and would have likely yielded more interpretable results.

The results of the industry and presence of a major retail chain variables yield particularly interesting results, and seem to merit the most potential for future study. Further research into the effect of an agriculture or farm-related venture on participation in a start-up or venture success would provide those of us in agricultural economics with a great deal of insight in how to approach assisting the entrepreneurs who ask for our guidance and support. It may also further help universities in structuring extension programs to better suit the needs of entrepreneurs. The presence of a major retail chain variable may gives us a very interesting result, despite its limitations in terms of the varying distance perception of community. A more specific question may prove useful in determining sufficient infrastructure within a community, as well as providing entrepreneurs with a better understanding of how community infrastructure affects their success or failure in getting their business off the ground.

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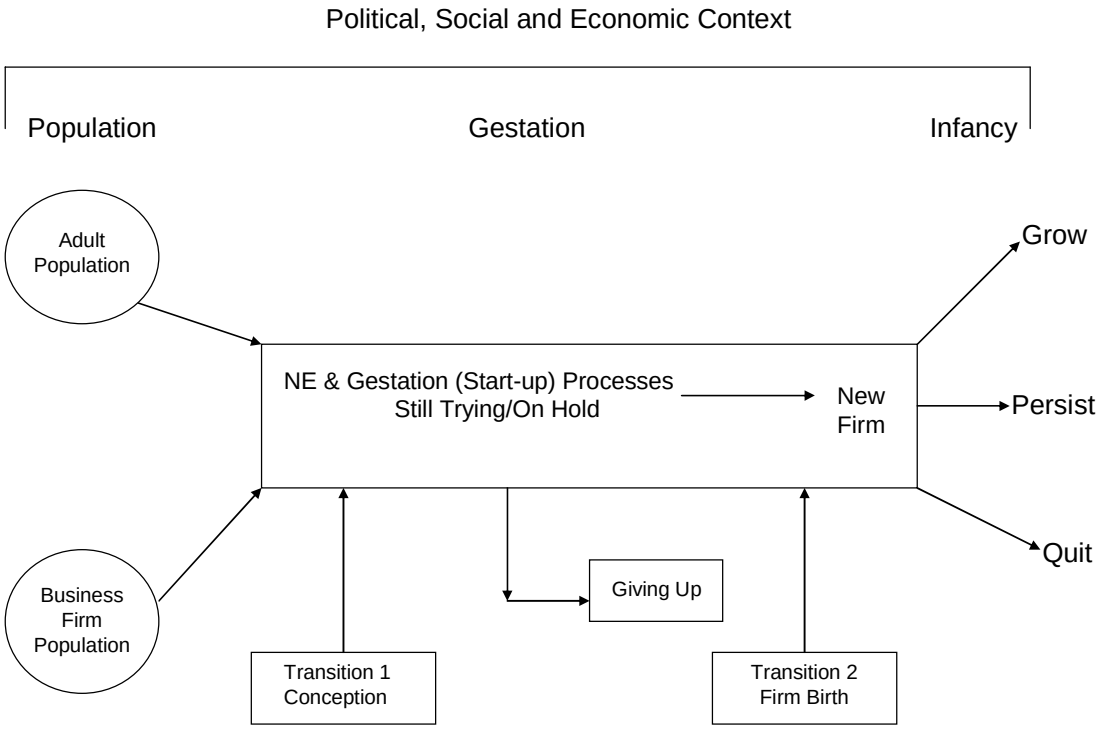
Figure 1. Diagram of the Entrepreneurial Process



Source: Reynolds et al. (2004)

Table 1. Frequencies and percentages for survey variables of interest

Variable Description	# Obs.	Frequency	%
Purdue University workshop (PU)	101	25	24.75%
Small Business Development Center workshop (SBDC)	101	76	75.25%
Residency less than 1 year (LR1)	101	9	8.91%
Residency 2-5 years (LR2)	101	29	28.71%
Residency 6-10 years (LR3)	101	18	17.82%
Residency 10 or more years (LR4)	101	45	44.55%
Age 18-25 (AGE1)	101	8	7.92%
Age 26-44 (AGE2)	101	70	69.31%
Age 45-64 (AGE3)	101	22	21.78%
Age 65 or older (AGE4)	101	1	0.99%
Female (FEM)	101	62	61.39%
Black or African American (BLACK)	101	17	16.83%
White (WHITE)	101	79	78.22%
Other race (OTHER)	101	5	4.95%
Single (SING)	101	30	29.70%
No children under 18 in household (CHILD1)	101	45	44.55%
One child under 18 in household (CHILD2)	101	16	15.84%
Start-up (STARTY)	101	30	29.70%
Type of business retail-related (RETAIL)	101	32	31.68%
Type of business service-related (SERVICE)	101	54	53.47%
Type of business farm-related (FARM)	101	9	8.91%
Major retail chain (CHAINY)	101	92	91.09%
Stable community (STABL)	101	41	40.59%
Deteriorating community (DETER)	101	9	8.91%
Some college (COLLEG)	101	37	36.63%
Bachelor's degree (BACH)	101	34	33.66%
Graduate degree (GRAD)	101	20	19.80%
Previous start-up experience (PSTARTY)	101	30	29.70%
Attempted business plan (BPLANY)	101	62	61.39%
Approximate net worth <$50,000 (NWLT50K)	101	47	46.53%
Approximate net worth >$50,000 (NWGT50K)	101	54	53.47%
Self-employed parents/guardians (SEPY)	101	43	42.57%

Table 2. Binomial logistic regression results

Variable Names	Variable Code	Coefficient	P-Value
Constant		-6.551059	0.0136
Purdue workshop	PU**	2.348634	0.0309
Female	FEM**	1.704233	0.0170
Age: 45 or older	AGE2	0.295006	0.7368
Black	BL	-0.211537	0.8056
Other race	OT	1.334219	0.3596
Single	SING	-0.787897	0.2943
No children in the household under 18	CHILD1**	-1.461645	0.0583
1 child in the household under 18	CHILD2	1.316528	0.1423
Type of business: retail	RETAIL	-1.335202	0.2015
Type of business: service	SERVICE	0.222769	0.8339
Type of business: farm	FARM*	-2.402613	0.0798
Major retail chain present in community	CHAINY**	3.432964	0.0507
Stable community	STABL	-0.091182	0.8929
Deteriorating community	DETER	1.101478	0.3464
Some college education	COLLEG	1.075064	0.3450
Bachelor's degree	BACH	0.069482	0.9549
Graduate degree	GRAD*	1.955082	0.1061
Previous start-up experience	PSTARTY	-0.037545	0.7419
Attempted Business Plan	BPLANY	0.513771	0.4060
Net worth less than $50,000	NWLT50K*	1.099079	0.0974
% Correctly Predicted		85%	
Log Likelihood Function		-42.41	

*Indicates significance at the 10% level
**Indicates significance at the 5% level