The Effect of Social, Cultural, and Political Values on Entrepreneurial Perceptions and Venture Creation: A Global Investigation

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Abstract

The effect of entrepreneurial activity on economic development has been researched thoroughly. New firm creation spurs economic growth by creating employment opportunities, cultivating innovation, and encouraging competition. Globally, there are countless areas that could benefit from a livelier entrepreneurial ecosystem. So how does a government or population first spur entrepreneurial activity? An entrepreneur's perceptions are among the most powerful factors that impact the life or death of a new venture, but the determinants that influence how these perceptions first form are still largely unknown. Using survey data collected by the Global Entrepreneurship Monitor in 2010 across the United States, Japan, Switzerland, Israel, United Kingdom, Peru, Russia, Iran, and China, I conduct binary logistic regressions of individual level characteristics, social ideals, cultural norms, human development, and other environmental attributes on the most important perceptions of entrepreneurs. These perceptions have been identified by previous research as an entrepreneur's perception of local opportunities, internal skills, and fear of failure in creating a new venture. I find that several social, cultural, and political values have a significant effect on the psychological behavior of nascent entrepreneurs.

I. Introduction

It is no secret that the United States is an entrepreneurial country and that many Americans consider entrepreneurship an attractive career path. Why shouldn't they? Careers in startups are seen as glamorous pursuits, in which hardworking people are free to work as their own boss with the chance of sharing the podium with the Spiegels (CEO and Co-Founder of Snapchat, Inc.) and Zuckerbergs (CEO of Facebook, Inc.) of the world. These rare cases of success have injected the American business culture with illusions of startup-grandeur and have turned safe career paths into pejoratives, those reserved for the unambitious and dull. In stark contrast, Japanese business culture has, for many years, shied away from entrepreneurship. The Japanese principle of 終身雇用 or *Shūshin-Koyō* meaning "lifetime employment" presents a strong antithesis to the mindsets of those living in the entrepreneurial Promised Land just south of San Francisco.

In reality, the growth of entrepreneurship globally is more complicated. Experts and reporters in the United States, for instance, are conflicted about America's entrepreneurial future. On one hand, there are optimists and those that consider America to be at advantage, even in the aftermath of the housing crisis, given that "[American] citizens have an unusual belief that…their fate still lies in their own hands. They are comfortable with the risk-taking that is at the heart of entrepreneurialism," (The Economist, *The United States of Entrepreneurs*, 2009). The Economist article continues, citing several structural advantages for American entrepreneurship, such as the well-established venture capital industry which is estimated by IHS Global Insight consultants to have contributed to nearly 17% of America's GDP and 9% of private sector employment. On the other hand, plenty of other researchers believe that America "is struggling to transform innovations and insights into successful companies with broad reach"

(WSJ, *The Crisis in American Entrepreneurship*, 2016). Decker et al. (2015) concluded that "the pace of business dynamism and entrepreneurship in the U.S. has declined over recent decades," beginning around 2000 and "accompanied by a decline in high-growth young firms" (Decker et al. 2015). The difference in opinion stems from a disagreement on how entrepreneurship can effectively grow and affect economies.

In terms of the world economy, the Global Entrepreneurship and Development Institute 2015 report found that the United States, Canada, Australia lead the world based on their Global Entrepreneurship Indices (GEI), with Japan ranked 30th. As for the perceptions of entrepreneurs globally, the Global Entrepreneurship Monitor found that "on average, 42% of working-age adults in the GEM economies see good opportunities around them for starting a business, but a little more than one-third of them would be constrained from starting a business due to fear of failure" (GEM 2015 Global Report). The perception of entrepreneurship in a country is sometimes much different than the reality. The perversion for and aversion to entrepreneurship also differ significantly across borders and stem from the underlying social values of that country.

Entrepreneurship and new firm creation is an important resource for any economy, regardless of development. It is empirically supported that entrepreneurship drives sustainable economic growth by fostering employment, nurturing innovation, accelerating structural changes in the economy, promoting competition and, by extension, increasing productivity (GEM 2014 Annual Report). In areas like sub-Saharan Africa, where youth unemployment continues to rise and young adults must first join family businesses before entering the broader labor market, increased levels in entrepreneurship could work to reverse the unemployment trend. The causal relationship between new firm creation and economic growth has been widely studied and

confirmed, but it is fundamentally important to identify what additional environmental factors first nurture an entrepreneurial ecosystem as they vary by country (Vernon 1966, 1970; Nelson and Winter 1977; Patel and Pavitt 1989). The broad environmental drivers behind entrepreneurship have been identified in past research as government policy, economic regimes, social norms, and even media attention. It is crucially important for governments and institutions to understand how to first promote an entrepreneurial ecosystem which can subsequently spur new firm creation and economic growth. Therefore, the purpose of this paper is to define the nuanced environmental factors present in a country which influence the perceptions of an entrepreneur at an individual level. More specifically, the research will seek to explain three perceptions, namely an entrepreneur's perception of surrounding opportunities, internal skills, and fear of failure in starting a new venture.

Past work has studied entrepreneurship by first building a conceptual framework which creates boundaries between ideas and organizes those ideas into a cohesive structure. There is a consensus in academia that entrepreneurship has no defined theoretical framework, so instead, researchers build conceptual models based on intuition and empirical results. Gartner (1985) created a novel conceptual framework which linked environmental factors and individual entrepreneurial characteristics, but this analysis also includes interactions with firm performance and creation process, while also not stating that an environment is directly responsible for shaping entrepreneurial beliefs. Lumpkin and Dess (1996) redefine Gartner's conceptual framework and state that the individual entrepreneur is primarily responsible for his or her firm's performance, and is highly influenced by the surrounding environment throughout the creation of the venture. Both of these approaches place little emphasis on the exact timing and nature whereby an environment affects an entrepreneur.

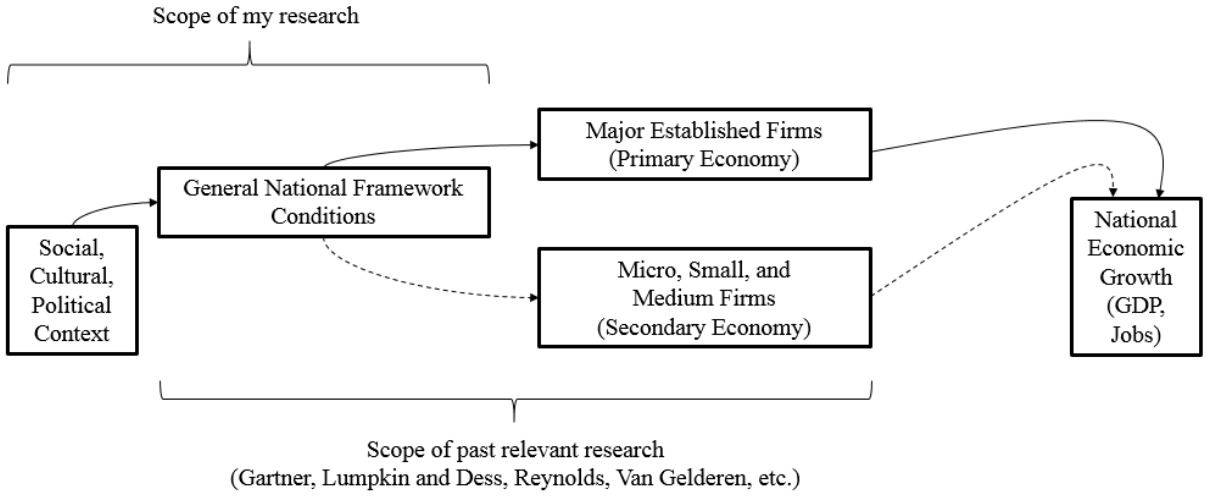
As data availability has improved in recent decades, researchers have begun to more precisely define these interactions through more empirical methods. The goal of these studies was to identify the factors which influence *firm performance*, which then provides a link between entrepreneurship and economic growth. Reynolds (1997) performed a multivariate and logistic regression analysis based on survey data collected from recently created firms in the US, concluding that geographic location, firm age, and education level of management predict early entrepreneurial success rates. Van Gelderen et al. (2005) found that perceived market risk, time allocation of management, availability of capital, and certain industry advantages explained new firm performance. The common thread in these studies is the explanation of entrepreneurship by only focusing on a startup's performance.

There are three reasons why the focus on firm performance is limiting for understanding entrepreneurial ecosystems across countries. First, it is simply hard to access reliable data from startups because of their size. Performance metrics at any level in the organization are either privately held or unavailable unless included in a survey. Second, measuring and comparing performance for startups is at the discretion of the researcher and a subjective analysis. Most startups, like many in the US, are pre-revenue and focused on future growth potential rather than current earnings. Third, by only seeking to explain individual firm performance, these studies do not help explain entrepreneurial activity cross-culturally and instead tend to look at companies in specific industry within one or two countries. In summary, these works do recognize environmental effects, but are unclear about exactly when and how they promote entrepreneurship in the new firm creation timeline from a global perspective. I believe that entrepreneurial activity across countries is better explained by looking exclusively at the effect of social, cultural, and political factors on entrepreneurial beliefs at the conception of a new firm.

I believe that *perception* is an equally important method of defining an entrepreneurial ecosystem as *performance*. The conception of any new firm begins first with an entrepreneur who is convinced that he is able to succeed in his economic environment. This conviction is based on a confidence that he has the skills necessary to succeed relative to his peers, that there are potential opportunities present in his country that he can put his skills towards, and that his economic environment is relatively stable. These concerns arise from the social, cultural, and political context within the entrepreneur's country. If entrepreneurs do not first believe their venture is worth pursuing, how can a firm with performance measurements be created in the first place? This relationship is largely unexplored but not completely unfounded. Studies that focus on nascent entrepreneurship, like that of Van Gelderen et al. (2005), have concluded that factors such as *perceived market risk* are extremely influential in the early stage of venture creation. The term nascent entrepreneur refers to an entrepreneur who is in the earliest stage of creating a new venture, essentially still on the drawing board. The Global Entrepreneurship Monitor's 2014 Annual Report states that early-stage entrepreneurial activity correlates strongly with perception of opportunities and capabilities. Furthermore, this approach allows for a much needed bridge between entrepreneurship and established economic theory, specifically the theory behind institutional economics which studies the role of institutions and their effect on economic behavior. I believe that a country's environment, including social norms, governmental policy, or economic regimes, has a causal relationship on the perception of entrepreneurship within a country, a factor which constitutes the main difference between entrepreneurial ecosystems

cross-culturally. For the sake of clarification, a visualization of the placement of my research within the scope of other research on entrepreneurship is shown below:

Model 1: Conventional Model of Conventional Economic Growth



Source: GEM 2014 Annual Report, p. 18

The environmental factors that have the most direct influence on a country's entrepreneurial ecosystem are numerous. Intuitively, some of these factors do not have isolated effects on entrepreneurs and extend their influence to other institutions besides startups. This paper will seek to draw relationships between entrepreneurial perception and environmental variables, including market entry risk, competitiveness, government regulation, economic regimes, taxes, and others further clarified in Section IV.

In summary, the goal of my research is to discover whether changes in the social, cultural, and political context of a country affect individual perceptions of entrepreneurship. I have chosen to look at 9 countries, namely, United Status, Japan, Switzerland, Israel, United Kingdom, Peru, Russian Federation, Islamic Republic of Iran, and China. These countries were selected based on their rankings in the 2010 Human Development Index which takes into

account life expectancy, education, and income per capita indicators and is published by the United Nations Development Program.

The paper is organized in the following structure. In Section II, this paper presents a review of the relevant literature. In Section III, this paper explains the datasets used to measure specific environmental factors and their correlations with entrepreneurial perception. In Section IV, this paper justifies the econometric analysis used to calculate entrepreneurial perception within a country. In Section V, this research shows the empirical estimation of the exact effects between an environment and an entrepreneurial ecosystem. Section VI concludes the paper and discusses my findings.

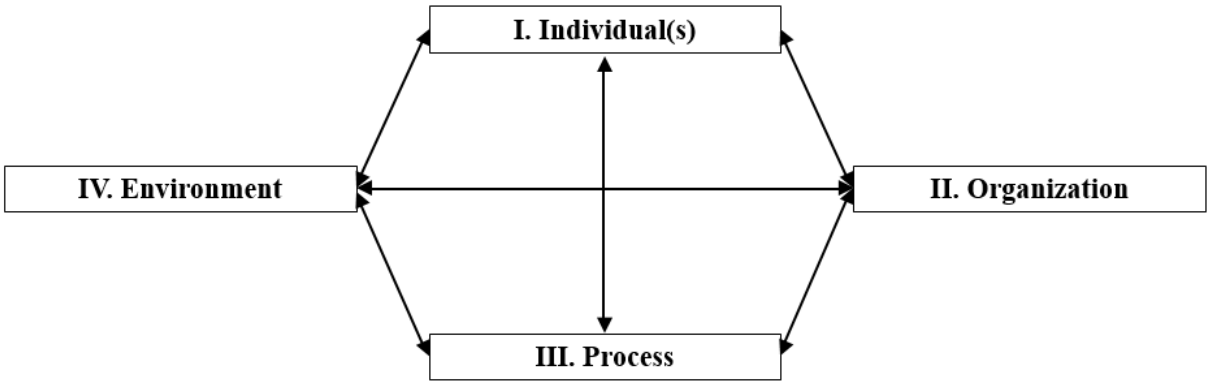
II. Literature Review

A. Conceptual Framework Attempts

There has been a significant amount of research already done on the environmental factors which influence a nascent entrepreneur. Most of these studies differentiate themselves by focusing on startups in a specific country, industry, time period, or use different methods of analysis to provide useful additions to the literature. From a broader perspective, plenty of researchers have attempted to create modern theories about entrepreneurship, still a largely understudied topic within economics. William Gartner, in his article "A Conceptual Framework for Describing the Phenomenon of New Venture Creation" published in 1985, created the original conceptual framework for describing the different factors that influence an entrepreneur and his or her venture. This conceptual framework was divided into four main groups: effects

derived from the (i) individual(s), (ii) organization, (iii) process, and (iv) environment (Gartner, 1985). A visualization of this conceptual framework is shown below:

Model 2: Gartner's Conceptual Framework



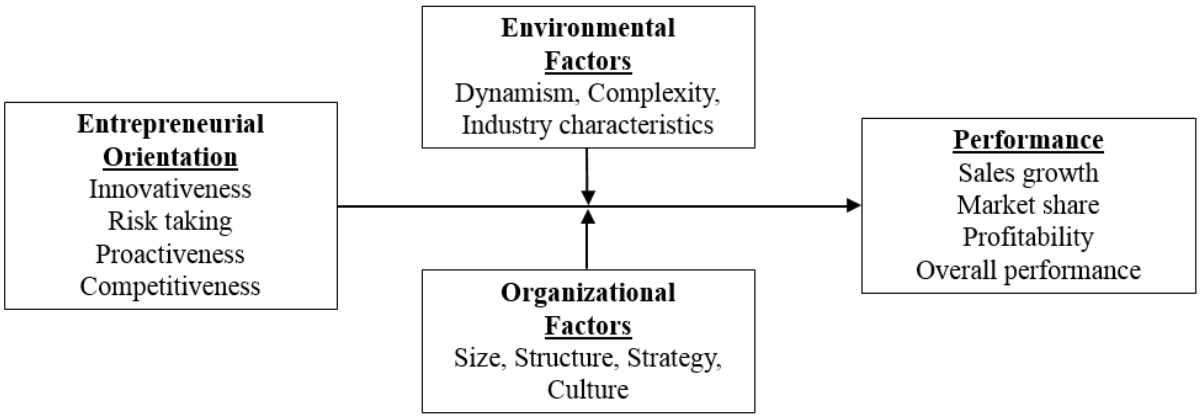
Source: Gartner (1985), *Academy of Management,* pg. 698

Gartner wanted to create a multidimensional framework, an improvement from the past research he cites which was one-dimensional and only considered one aspect of new venture creation at a time. Within each of the four main areas, Gartner identified several underlying effects. For example, his criteria for factors influencing the entrepreneur individually were the need for achievement, locus of control, risk taking propensity, job satisfaction, age, education, and other human capital considerations. Since there is no established theoretical framework for entrepreneurship, Gartner's conceptual framework has provided subsequent researchers with a platform from which to test empirical data.

Similarly, Lumpkin and Dess (1996) attempted to build on Gartner's conceptual framework directly. Their research focused on "clarifying the entrepreneurial orientation construct and lining it to performance" (Lumpkin and Dess, 1996). In their model, there were again four main areas within entrepreneurship, namely: (i) entrepreneurial orientation, (ii)

organizational factors, (iii) performance, and (iv) environmental factors. A reproduction of their new conceptual framework is shown below:

Model 3: Lumpkin and Dess's Conceptual Framework



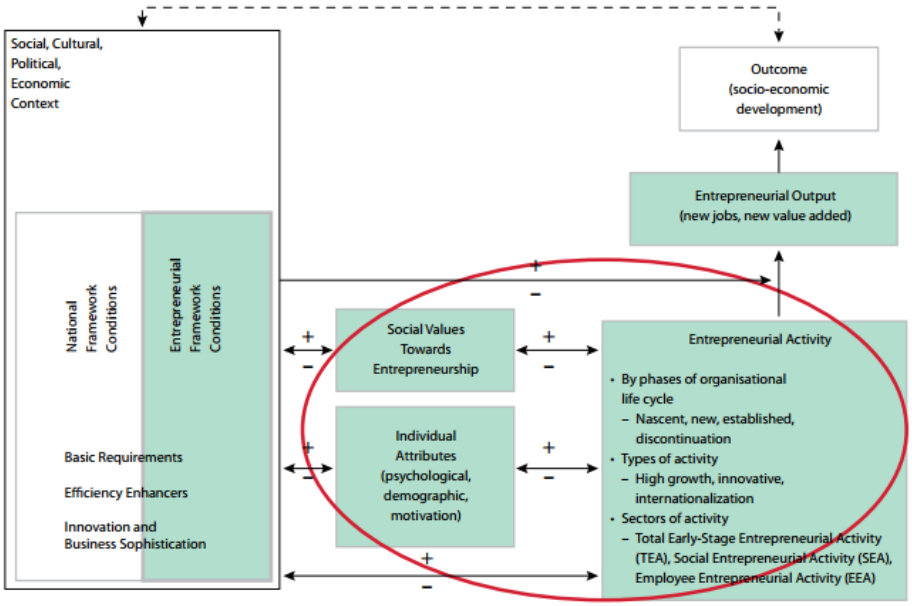
Source: Lumpkin and Dess (1996), *Academy of Management*, pg. 152

The slight change in nomenclature is important for a couple of reasons. With the added benefit of 11 years of additional research to draw from, Lumpkin and Dess were able to improve on Gartner's research by being more specific with regard to their terminology and directionality of effects. In Gartner's conceptual framework, all of the four main areas interacted with one another, since it is difficult to specify directionality without additional empirical testing. In Lumpkin and Dess's research, entrepreneurial orientation, under the influence of organizational and environmental factors, drives performance. Furthermore, Lumpkin and Dess addressed human capital considerations as the "entrepreneurial orientation" instead of Gartner's area called "individual factors". This distinction is important because the former term encompasses a wider collection of factors. Both of these conceptual frameworks are helpful for guiding my analysis, but also differ in their primary area of interest. For Lumpkin and Dess, their research was interested in organizing the specific factors which influence a startup's performance primarily after its creation. Especially for Lumpkin and Dess, they created a model which showed that

environmental factors influenced the *performance* of an already existing firm. In this case of my research, the environmental factors are also a significant factor in the creation of a firm, since they influence an entrepreneur's *perception* for the market in which he or she wants to enter. Most of the environmental factors that Lumpkin and Dess identified as relevant for performance are also relevant for perception, since in either case, they are exogenous of the individual and firm. However, before the conception of a firm, broader social, cultural, and political considerations are in play.

The Global Entrepreneurship Monitor (GEM) is an organization created in 1999 to study why some countries are more "entrepreneurial" than others. In the last 16 years, the GEM has collected and analyzed more than 200,000 surveys each year in now over 100 countries. Each year, the GEM includes their own conceptual framework in their annual report with revisions from the previous year. In the 2014 Annual Report, the GEM created the conceptual framework depicted below:

Model 4: The Revised GEM Conceptual Framework



Source: 2014 GEM Annual Report, pg. 20

This conceptual framework is much more aligned with my research interests for a few reasons. First, as opposed to Gartner or Lumpkin and Dess's frameworks, the GEM framework included the environment factors, titled "Social, Cultural, Political, Economic Context", at the origin of entrepreneurial activity within a country. The previous frameworks state these factors are influential sometime during the firm's creation. Second, this framework is applicable to a cross-cultural study of entrepreneurship in countries, since the organization of ideas is on the more macroeconomic scale. Third, the framework portrays the cyclical process of environmental factors, entrepreneurship, and economic growth which helps visualize the motivation behind my research, namely, to determine how changes in *environmental factors* can shape *perceptions* about entrepreneurships, which in turn increases *socio-economic development*. Admittedly, the GEM is the same form of research as Gartner or Lumpkin and Dess, who publish work in academia. But the project was created by head researchers to be a source of global entrepreneurial data and analysis and it is a primary source of information on the topic.

B. Environmental Effects on Nascent Entrepreneurship

The second type of study relevant to this research considers the environment effects on nascent entrepreneurship and startups in the pre-entry stage through empirical methods. Since perceptions of entrepreneurial opportunities and capabilities are most relevant for the conception of a startups, it is important to consider how researchers have predicted pre-entry success. Pre-entry describes the period of time before a new venture becomes operational and does not define the pre-IPO period in its entirety.

Reynolds (1997) is the main body of literature on pre-entry success factors. In his paper titled "Who Starts New Firms? – Preliminary Exploration of Firms-in-Gestation," Reynolds performs a multivariate analysis of 1,106 *nascent entrepreneurs* with accompanying logistic

regression models. From his empirical estimation, Reynolds concluded that *geographic location of venture*, firm age, and education level of management are the most significant predictors of success in the pre-entry stage. Van Gelderen et al. (2005) is the other well-cited study concerning pre-entry success factors. Titled "Success and Risk Factors in the Pre-Startup Phase," these researchers surveyed 517 nascent entrepreneurs over a three-year period using logistic regression analyses. Van Gelderen et al. concluded that there are four main variables that are significantly related to pre-entry success, specifically *perceived market risk*, time allocation, amount of intended startup capital, and certain industry advantages. As stated earlier in Section I, my research is focused on the earliest time period in pre-entry, namely the conception of the venture. Thus, the variables included in these studies focus on more than just environmental effects. However, both of these studies find that geographic location and perceived market risk are correlated with pre-entry success as measured by performance. This implies that both of these factors were also taken into account at the origination of the venture.

C. Global Entrepreneurship Research

Previous literature on entrepreneurship has attempted to compare the success of startups in different countries. Renko, Carsrud, and Brännback (2009) collected data from interviews in biotechnology startups in the United States, Finland, and Sweden. The general conclusions of their research was that technological capability, the amount of time and money invested in R&D or strategic technology alliances, is the strongest indicator of product success. In this study, the technological capability is not just perceived, but formed with investment in R&D. Renko et al. does provide a rationale behind how to compare entrepreneurial data between countries and draw broader conclusions about general success factors within the biotech industry. Still, this study

focuses on performance rather than the psychological factors that this paper is primarily concerned with. The remaining studies in Section C all utilize GEM dataset.

Within the global study of entrepreneurship, studies more aligned with my study of nascent entrepreneurship utilize the Global Entrepreneurship Monitor data instead of independently created survey data. Munoz-Bullon et al. (2015) examines the psychological profiles of entrepreneurs in the US and European Union and the internationalization of their new ventures. This study used a logistic regression model to explain how the proactiveness, risk taking ability, and innovativeness of nascent entrepreneurs predicts their entrance into foreign markets. Their results showed that there is a positive correlation between a nascent entrepreneur's propensity to export to other countries and their proactiveness and perceived capabilities. Munoz-Bullon hypothesizes, "It is crucial for entrepreneurs to recognize vital information regarding foreign markets because their decisions to expand internationally often stem from their belief that they have identified an opportunity no one else has yet recognized," (Munoz-Bullon et al., 2015). Like this study, my research leverages the power of the GEM data set for its rich information on psychological factors, such as perceived capabilities, opportunities, and fear of failure. Instead of looking at foreign exporting behavior, my study focuses on the environmental factors which allow an entrepreneur to recognize viable opportunities solely within their own country.

Concerned with entrepreneurial activity within a country's borders, Chowdhurry et al. (2014) also leverages the GEM data set, in his case arguing that there are different types of entrepreneurship in capitalist countries across the globe. They posit that there are three varieties of entrepreneurship, namely new firm startup, self-employment, and early stage entrepreneurial activity. Chowdhurry and his collaborators analyze data from 5 years of data and 44 countries.

The study finds that there are three institutional factors that influence entrepreneurial activity: property rights, freedom from corruption, and fewer start-up procedures predict nascent firm ownership cross-culturally. My research is closely linked to the general goal and procedure of their study. The social, cultural, and political context of a country are institutional factors. However, my analysis focuses on 9 countries, all of which are not capitalist economies, and the influence of varying economic systems on nascent entrepreneurship is an important consideration in my analysis.

Wennekers et al. (2005) was concerned with relating entrepreneurial opportunity and necessity nascent entrepreneurship for 36 countries participating in the 2002 GEM survey to the level of economic development, determined by per capita income and innovative capacity. The researchers conducted three different functional forms of this relationship: a linear relation, a quadratic specification, and an inverse specification. Similar to this research initiative, my research is also focused on relating entrepreneurial opportunity with the level of economic development, but instead for 9 countries participating in the 2010 GEM survey and with economic development in terms of placement in the corresponding 2010 HDI. Wennekers et al. also utilized the 2002 GEM dataset for country-wide purposes, rather than to also identify individual level characteristics that influence perceived entrepreneurial opportunity. Finally, even though the regressions used to determine these relationships differ between my study and theirs, the signs in the regression output do provide a connection between research methods.

Woodside et al. (2015) examines six countries, namely Brazil, Russia, India, China, Germany and the US, all of whom participated in the 2014 GEM experts survey. The study attempted to develop an underlying theory that would create relationships between culture, entrepreneurship, innovation, and quality-of-life for the aforementioned countries. The primary

model was constructed from Boolean algebra operation in order to create an algorithm for their hypothesis that nurturing replicative rather than innovative new venture indicates low quality-of-life. Additionally, Woodside et al. (2015) also developed their own general theory of culture, entrepreneurship, innovation, and QOL. In its simplest form, their model looks at how QOL, measured by health and per capita GDP, is influenced by a confluence of factors like uncertainty avoidance, individualism, power distance, masculinity, perceived transparency, and other environment factors. Their results showed that individual initiative and minimal amount of risk-taking ability promote entrepreneurial activities, and that there exists high nomological validity (in statistics, a nonlogical necessity or law of nature) for the impact of cultural and environmental effects on entrepreneurship. While the interaction of the factors is reversed in comparison to my research, the study does show promising results that QOL, similar to our HDI rankings, interacts with entrepreneurial perceptions and activity.

Wennberg et al. (2013) conducted a multi-level examination of the interaction between national culture and the decision for an entrepreneur to enter a market. The study examined 42 countries participating in the 2001 – 2008 GEM survey and their number of respondents totaled a combined 324,566. The variables which the study identified as a result of cultural norms were fear of failure and entrepreneurial self-efficacy, defined as "an individual's cognitive estimate of his or her capabilities to mobilize the motivation, cognitive resources and the will of action needed to exercise control over events in one's life," (Wennberg 2013, 758-9). Their findings suggested that cultural norms such as institutional collectivism and uncertainty avoidance influence how the variables representing fear of failure and self-efficacy impact the probability of entrepreneurial entry. The study, like mine, draws relationships between perceptive variables

such as fear of failure and self-efficacy (a cousin to my variables *opport* and *skill*) and cultural norms.

Vaillant and Lafuente (2007) focused on determining the influence of institutional frameworks on two cultural-traits, social fear of entrepreneurial failure and the presence of entrepreneurial role models, distinguishing between the observed entrepreneurial activity in rural and urban areas of Spain. Their primary logit regression model chose entrepreneurial activity as the dependent variable and specified certain control variables, social fear of failure, and presence of role model as the models independent variables. Similar to other studies considered with the interaction between cultural and social institutions and entrepreneurial perceptions, the regression set-up for this study represents a mirror image of the binary logistic model presented in this paper.

Also at the national level, Valliere (2008) sought to examine the environmental factors that influence the growth of entrepreneurial activity for 53 countries participating in the 2002 – 2006 GEM survey. The dependent variable in the regression was opportunity-based entrepreneurship (OEA) and was "selected as most closely reflecting the greatest potential influence of framework conditions when entrepreneurs are free to choose (i.e., where entrepreneurial opportunities and entrepreneurial capacity intersect). OEA most closely resembles the dependent variable total entrepreneurial activity (TEA), although clearly more specified. In terms of connections between independent variables across the studies, Valliere (2008) uses three independent variables, Qsri, Uirc, and Ecac, as a composite for institutional development (Inst). This institutional development composite is most closely related to the stratification of countries based on ranking in the HDI.

D. Perceptions of Risk and Success of Entrepreneurs in Global Cultures

The fourth area of research that is of direct concern for this research contains studies which have analyzed how an entrepreneur's perceptions of risk and success present in their culture which influence their entrepreneurial activity. As entrepreneurial research has progressed, benefitting from enhanced methods of gathering empirical data, studies from the past decade often conclude that entrepreneurs succeed based on how they interact with their specific environment.

Lee and Peterson (2000) provides a framework nearly identical to the structure of this paper, analyzing the culture, entrepreneurial orientation, and global competitiveness of five different countries. The cultures in question are, namely, the United States, Japan, Russia, China, and Mexico, similarly distributed as the countries relevant for this research. Lee and Peterson understand that "because individuals' personalities and behaviors, firms, political/legal systems, economic conditions, and social mores are all intertwined with the national culture from which they originate, the study of entrepreneurship under a cultural umbrella seems appropriate" (Lee and Peterson 2000, 403). The specific external factors that are included in their study are cultures that include varying levels of (1) uncertainty avoidance (degree of acceptance for uncertainty or willingness to take risk), (2) power distance (degree of tolerance for hierarchical or unequal relationships), (3) masculinity (degree of stress placed on materialism), (4) individualism (degree of emphasis placed on individual accomplishment), (5) achievement (describes how power ad status are determined), and (6) universalism (describes norms for regulating behavior) (Lee and Peterson 2000, 404). Respectively, the study finds that countries are more conductive to entrepreneurship when the above characteristics are as follows, (1) weak, (2) low, (3) masculine, (4) individual, (5) achievement, (6) universal, respectively.

Scott Shane (1993) also incorporated a basic model of how cultural influences impact national rates of innovation. In his study, he attempted to identify similar aspects of cultural values such as individualism, power distance, uncertainty avoidance, and masculinity. However, in contrast to Lee and Peterson (2000) and largely the initiative of this paper as well, Shane's scope encompasses 33 countries, with data taken in 1975 and 1980. As this paper suggests, Shane was prescient to notice that "the national rates of innovation are driven by more fundamental forces than economic conditions [amount of money spent on research and development or industrial infrastructure], and that societal change may be necessary to make less innovative societies more innovative" (Shane 1993). Since Shane's study also includes a time series component and identifies changes between 1975 and 1980 as well as cross-culturally, the conclusions are not directly aligned with that of this paper. Nevertheless, the study isolated four general, main conditions across countries that promote entrepreneurship: high acceptance of uncertainty, high levels of individualism, low power distance, and per capita income as an identifier of economic development (Shane 1993). The two previously mentioned studies recognize an individual's ability to interact within the cultural norms of their environment cross-culturally, but there is other research that focuses solely on an entrepreneur's perceptions of risk and success within a particular environment.

Along the same vein as Shane (1993), Mueller and Thomas (2000) also attempts to highlight the impact of cultural values on entrepreneurship, this time focusing on nine countries with respondents answering survey data specific to their locus of control and innovativeness. Mueller, Assistant Professor of Florida International University, would agree with Shane (1993) and Lee and Peterson (2000) on the particular benefits of certain cultural traits on entrepreneurship. Mueller does concede that "[besides a few notable exceptions], international

comparative studies of entrepreneurship are rare, hampered by barriers such as difficulty in gaining access to entrepreneurs in other countries, high expense, and lack of reliable secondary data" (Mueller and Thomas 2000, 53). The survey data found in the GEM database is a convenient solution to this problem of information availability and the research conducted in this paper, therefore, relies heavily on GEM's 2010 Adult Population Survey and GEM's 2010 National Expert Survey.

In summary, this paper seeks to contribute to the existing literature in four ways. First, this paper follows the conceptual framework developed by the GEM 2014 Annual Report. Second, this paper attempts to specify the environmental factors that directly influence an entrepreneur at the conception of a venture, outside the scope of performance. Third, this paper leverages GEM data heavily, attempting to recognize broad trends across 9 countries in varying stages of development and diverse social, cultural, and political backgrounds taken from the 2010 HDI. Fourth, the dependent variables of my analysis are specifically perception-related variables, rather than market entry or internationalization.

III. Data

The data presented in the following section comes from two different types of sources. Section A explains the use of the Human Development Index as a basis for country selection. Section B presents data sets collected by GEM's 2010 Adult Population Survey. Section C describes the data found in the GEM's 2010 National Expert Survey. The GEM data set is modified to include macroeconomic variables not already included.

A. Human Development Index

The selection of the 9 countries included in my analysis are chosen based on their different rankings in the 2010 Human Development Index (HDI). This index is published annually by the United Nations Development Program (UNDP). This program is principally focused on physical service work programs, as they provide development in over 170 countries and territories worldwide. In order to target these communities effectively, the UNDP collects data on life expectancy, education, and income per capita and compiles the statistics to form the HDI. It ranks every country into four different tiers of human development. The 2010 HDI was selected in order to most closely represent the ranking of countries at the approximately same time as the 2010 GEM APS and NES Datasets were collected, thus decreasing the chance of countries moving up or down in rank over the short period of time between when the survey and rankings were compiled.

There are several benefits from selecting countries based on their HDI position rather than from alternative indices or rankings. The titular focus (i.e. human development) is a more unbiased approach to ranking countries. The Organization for Economic Co-operation and Development (OECD) provides a ranking of countries based on overall well-being, creating a composite index from statistics like life satisfaction, work-life balance, education, civic engagement, and safety. While these factors are more than likely associated with economic development, it is not as direct a proxy as the HDI.

The HDI is also preferable to ranking countries based on one macroeconomic variable alone or even by creating an index from scratch. As seen in studies like Shane (1993) and Vernon (1966, 1970), some researchers have previously relied heavily on metrics such as per capital income as a way to differentiate between countries in terms of development. While all

three of these studies occurred before the time when the GEM APS and NES Datasets were created, measuring development on a single metric is less reliable than an index of metrics. Additionally, the creation of an index uniquely for the purposes of this research could introduce bias to the paper. For instance, Americans may consider certain metrics, like per capita income, more indicative than other metrics which more specifically apply to the nature of other countries. For these reasons, the use of HDI in the ranking of countries is preferable.

As for limitations, the unspecific nature of the HDI is a two-edged sword. Even though it does decrease bias for research, it also is only one index with its own components and weights. By choosing to rank countries under the authority of the HDI is also making the research specific to this index. As noted above, other successful studies have used individual metrics for this purpose and the HDI provides arguably the best option for the purposes of this paper. The rankings of the 2010 HDI for the 9 countries selected are reproduced in Appendix V.

B. GEM Adult Population Survey

The Global Entrepreneurship Monitor's Adult Population Survey measures the level and behavior of entrepreneurial activity in over 100 countries each year. Within each country, APS data must be collected from a minimum of 2000 respondents nationally. The annual surveys are conducted by that country's GEM National Team within the same time period each year, between April and June. The APS aims at placing the individual entrepreneur within the broader ecosystem. The survey questions are targeted at understanding the individual's entrepreneurial attitude, like perceived capabilities, opportunities, and fear of failure, as well as business-related metrics. The 2010 Adult Population Survey has been chosen for specific reasons. While the GEM has published the 2012 APS data, the most available dataset available, examination of the rhetoric and language in conducting the surveys does not mirror the purposes of this research as

closely as the 2010 survey questionnaire. For instance, survey questions of our three dependent variables, namely and succinctly perceived opportunities, perceived skills, and fear of failure, show that the 2010 survey responses are likely more helpful for the current research initiative. A table of descriptive statistics on important variables is shown in Appendix III.

The strengths of the 2010 APS are numerous and speaks to how widely the GEM is cited for its data. First, the procedure with which the survey is collected makes the dataset reliable and robust. A minimum sample size of 2000 individual responses makes further econometrics analysis more productive. Additionally, by conducting the APS globally almost always within the same quarter makes cross-country data more directly comparable. Secondly, the structure of the survey promotes a more comprehensive series of questioning formed by modules and blocks. The survey is a compilation of a series of modules, based on whether a response is mandatory or optional. The blocks which make up each module are distributed randomly throughout the survey, intended to assess different aspects of individual entrepreneurial characteristics.

The weaknesses present in the APS are limited for my purposes. First, because the APS has been active for more than 15 years, some of the survey questions have changed year-to-year and create inconsistencies with variables. Historical entrepreneurial activity and behavior may been different solely due to the alterations in survey questionnaires. Second, data on certain macroeconomic variables, like government form, economic system, recent economic crises, GDP growth, population growth, and unemployment relevant to my research must be added to the dataset. In order to remain consistent, these measurements must be added as close to the time when the survey was conducted as possible. Overall, the strengths of the APS dramatically outweigh the weaknesses in the scope of my research.

C. GEM National Expert Survey

As opposed to the APS, which surveys entrepreneurs in a particular country, the National Expert Survey (NES) surveys the opinions of experts in each country. The NES attempts to collect information on a country's Entrepreneurial Framework Conditions (EFCs). The EFCs of a certain country are ways to assess and compare the structure of its entrepreneurial ecosystem, including entrepreneurial opportunities, capabilities, and preferences. The APS describes characteristics about an individual's entrepreneurial nature, whereas the NES describes the entrepreneurial environment in which an entrepreneur lives. In order to be time consistent with the analysis of the perceptions in a country with regards to adults *and* experts, the 2010 NES dataset was chosen in conjunction with the 2010 APS dataset. A summary of descriptive statistics is shown in Appendix IV.

The 2010 NES has some notable strengths, especially for the purposes of my research. First, the most obvious benefit is the survey's credibility and relevance, collecting responses from experts of entrepreneurship in every country. Second, these datasets are deliberately made compatible with one another, using consistent survey questions so that the ECFs are comparable between countries. Third, the NES considers a country's ECF from various dimensions, including entrepreneurial finance, government policy, entrepreneurship education, entry regulation, and cultural and social norms. Responses about these environmental factors represent the majority of the independent variables in my regression model.

As with the APS dataset, the NES contains few weaknesses. First, each response is based solely on a five-point Likert scale, where 1 indicates that the statement presented is completely false and 5 indicates it is completely true. Since the NES does not require a minimum of 2000 respondents, subtle variations in responses and underlying trends are harder to detect. Second,

the NES is conducted annually, but not necessarily at the same time as the APS, although this is slight lack in consistency is a minor concern.

D. Dependent Variables for APS Regression

The following section outlines the dependent variables used in the binary logistic regression analysis for the 2010 GEM APS dataset. As briefly discussed in Section I and more fully addressed in Section IV.A, the three dependent variables were selected based on past research and data availability. All three represent a separate core pillar of an entrepreneur's behavior and perceptions about their surroundings.

Perceived Opportunity

The dependent variable *opport* encapsulates an entrepreneur's perception of opportunities present in their surrounding environment. Wennekers et al. (2005), Valliere (2010), and the 2014 Revised GEM Conceptual Framework (see Model 4) all include a similar variable measuring perceived opportunities of entrepreneurs either in their theoretical or empirical framework. Specifically, *opport* records the binary response to the following survey question posed in the 2010 GEM Adult Population Survey:

In the next six months, will there be good opportunities for starting a business in the area where you live? (1 = Yes, 0 = No)

The semantics of the question are important. This survey question specifies a short-term timeline, specifically in the next six months. The APS is conducted annually starting in March, making the assumed time horizon between September and October of 2010. The temporal aspect of this question is important because if the question was phrased thusly, "In the next twelve months…", many entrepreneurs may overlap their responses in the 2011 survey. The

opportunities specified are described as "good" and local, making the question broad in scope but also regional based on the individual entrepreneur's location.

Perceived Skill

The dependent variable *skill* represents an entrepreneur's perception of his or her skill, intellect, and locus of control in succeeding as an entrepreneur in their surrounding environment. Wennberg et al. (2013) and Woodside et al. (2015) both compare entrepreneurs in their selected countries based on a metric similar to *skill*, either self-efficacy or otherwise specified. *Skill* records the binary response to the following survey question:

Do you have the knowledge, skill and experience required to start a new business? (1 = Yes, 0 = No)

As suggested by the survey question, the variable *skill* is a combination of self-perceptions about one's entrepreneurial attributes related to one's ability to succeed. For instance in Wennberg et al. (2013), which analyzes GEM survey data spanning from 2001 – 2008, their dependent variable for *entrepreneurial self-efficacy* is identical to the phrasing of my variable *skill* found in the 2010 GEM APS.

Perceived Fear of Failure

The dependent variable *fear_fail* is defined as an entrepreneur's perception of fear of failure in starting a new venture within their country. This variable inherently also captures an entrepreneur's self-evaluation of their risk-taking ability given the market conditions they face. Wennberg et al. (2013) and Munoz-Bullon et al. (2013) seek to explain the interaction between entrepreneurial behavior and fear of failure. Since these studies also use GEM APS data, the

phrasing for their variables is identical to the one used in this research. *Fear_fail* records the binary response to the following survey question:

Fear_fail = Would fear of failure prevent you from starting a business? (1 = Yes, 0 = No)

E. Independent Variables for APS Regression

In order to explain the dependent variables discussed in the previous section, the next section outlines the independent variables used in the binary logistic regression analysis for the 2010 GEM APS dataset. The interactions between these variables and *opport, skill,* and *fear_fail* are more fully addressed in Section IV.A. As supported by past research, these independent variables seek to capture the individual-level attributes of the entrepreneurs included in the survey. Appendix I also provides a reference to the independent variables.

There are four variables in the regression which record the binary responses to survey questions about the social, cultural, and political context of the entrepreneur's surroundings, namely *equal_inc, good_career, high_status,* and *media_cov.* These variables were specifically chosen to capture the environmental factors which influence an entrepreneur's perceptions. As seen in Gartner (1985), Lumpkin and Dess (1996), and the 2014 GEM Annual Report, conceptual frameworks universally include environmental factors. In sequential order, these are the questions which correspond to the variables listed:

Equal_inc: In your country, most people would prefer that everyone had a similar standard of living. (1 = Agree, 0 = Disagree)

Good_career: In your country, most people consider starting a new business a desirable career choice. (1= Agree, 0 = Disagree)

High_status: In your country, those successful at starting a new business have a high level of status and respect. (1 = Agree, 0 = Disagree)

Media_cov: In your country, you will often see stories in the public media about successful new businesses. (1 = Agree, 0 = Disagree)

There are six other variables in the regression which capture the individual characteristics of the respondent, namely *gender, age, uneduc, hh_size, occu, and ownmge.* Wennekers et al. (2005), Vaillant and Lafuente (2007), Valliere (2008), Wennberg et al. (2013), Chowdhurry et al. (2014), Munoz-Bullon et al. (2015), and Woodside et al. (2015) all include a variety of control variables similar to these since it is important to account for individual-level characteristics. The variables *gender* and *age* are self-explanatory in nature, whereas *uneduc* measures the highest educational level attained by the entrepreneur, and *hh_size* specifies the size of a respondent's household by number of people. As for *occu* and *ownmge*, the specific survey questions are included in Appendix I, but simply describe the occupational status and management position of the entrepreneur.

Finally, the regressions include three different categories of indicator variables (referred to as "dummy variables") which further describe the environmental context of the country in which the respondent lives. These variables are *HDI, POL_SYST,* and *ECON_DEV*. The HDI indicator variables group the countries into three tiers based on HDI ranking, as shown in Appendix V. Similarly, the POL_SYST indicator variables group the 9 countries into four categories (monarchy, democracy, communism, and theocracy) based on political regime, as shown in Appendix VI. Finally, the ECON_DEV indicator variables group the countries into two categories based on economic development, as shown in Appendix VII.

F. Overview of Descriptive Statistics

In the descriptive statistics representing particular variables in the 2010 GEM APS Dataset, as shown in Appendix III, there are some results which either complement or mismatch previous research.

1. Statistical Inference of 2010 APS Dataset

Before presenting the results from the binary logistic regression estimation, it is first necessary to conduct statistical inference on the variables in order to understand the strengths and limitations of the survey responses.

T-Tests on Independent Variables in APS

I first tested the difference in means for all independent variables that are used in the regression. The SPSS output for the following t-tests can be found in Appendix III.A. In the t-tests, I tested the significance in the difference in means found for each independent variable, namely, gender, age, hh_size, equal_inc, god_career, high_status, media_cov, uneduc, occu, and ownmge. The test value for each variable was the mean, thus capturing the difference in means for each. The results from the t-tests are as follows:

Gender: Gender has a population mean of 1.51. It can be concluded that the population means are not statistically different since $p = .240 > .05$. Intuitively, this shows that there is not a significant difference in the amount of males and females in the analysis.

Age: Age has a population mean of 42.99. It can be concluded that the population means are not statistically different since $p = .967 > .05$. Intuitively, this shows that there is not a significant difference in the age range of the survey sample across the 9 countries.

HH_Size: Household size has a population mean of 3.38. It can be concluded that the population means are not statistically different since p = .948 > .05. Intuitively, this shows that there is not a significant difference in the household sizes in the survey dataset.

Equal_Inc: Equal_inc has a population mean of .52. It can be concluded that the population means are not statistically different since p = .220 > .05. Intuitively, this displays that across the respondents, the responses to this survey question are not statistically different.

Good_Career: Good_career has a population mean of .61. It can be concluded that the population means are not statistically different since p = .265 > .05. Intuitively, this displays that across the respondents, the responses to this survey question are not statistically different.

High_Status: High_status has a population mean of .74. It can be concluded that the population means are not statistically different since p = .195 > .05. Intuitively, this displays that across the respondents, the responses to this survey question are not statistically different.

Media_Cov: Media_cov has a population mean of .64. It can be concluded that the population means are not statistically different since p = .330 > .05. Intuitively, this displays that across the respondents, the responses to this survey question are not statistically different.

Uneduc: Uneduc has a population mean of 3.82. It can be concluded that the population means are not statistically different since p = .851 > .05. Intuitively, this displays that across the respondents, the responses to this survey question are not statistically different.

Occu: Occu has a population mean of 5.27. It can be concluded that the population means are not statistically different since p = .995 > .05. Intuitively, this displays that responses to this question are not statistically different.

Ownmge: Ownmge has a population mean of 0.20. It can be concluded that the population means are not statistically different since $p = .394 > .05$. Intuitively, this shows that the respondents are largely not the managers or co-managers of their own ventures.

Chi-Square Tests for Differences in Proportions

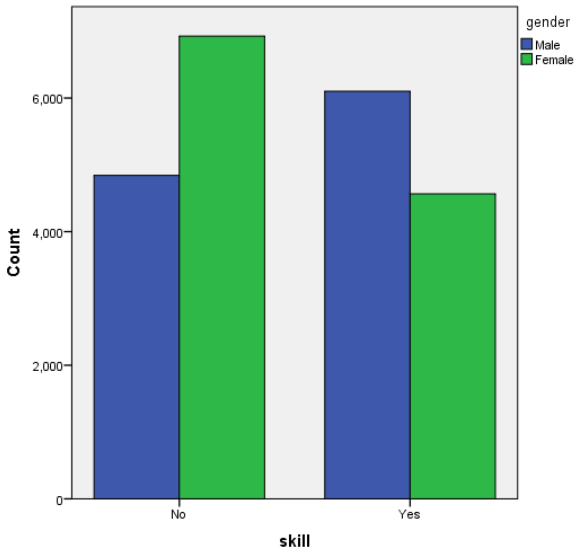
Next, I used the Chi-square nonparametric test to determine the differences in proportions across select groups, such as gender, age, household size, and education, in terms of the perception variables, namely opport, skill, and fear_fail. The Chi-square test was crucial to test whether there was a difference between the distribution of the survey responses and a nonparametric distribution unforeseen in the data. Before executing the Chi-square test in SPSS, I first observed the distribution of the aforementioned variables (gender, age, etc.) when the cases were weighted by the frequency variables (opport, skill, and fear_fail). Example of the histograms which I used to preliminarily examine the data are shown below:

H_o: Reject the null in favor of H_1

H_1: Perceived (opportunities, skills, or fears of failure) are not normally distributed across (gender, age, household size, or education level)

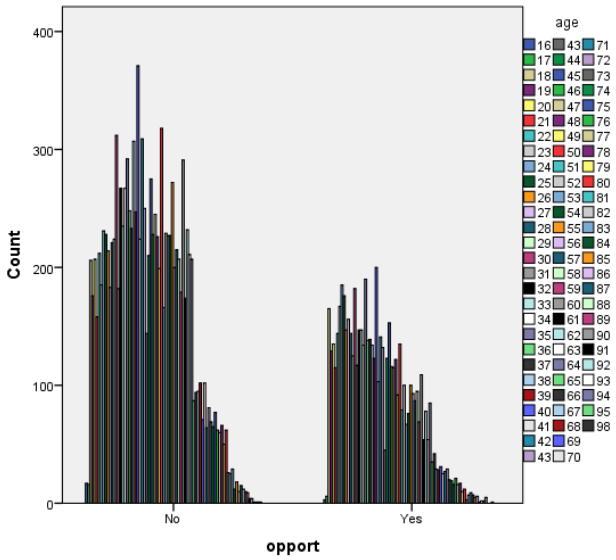
Graph 1 displays the histogram of survey responses to the question on perceived skill. Before running the Chi-square test, it is interesting to note that the response to the question on skill differs significantly between genders, as the majority of the male respondents chose “yes,” and conversely the majority of the female respondents chose “no.”

Graph 1: Histogram of population responses by gender on variable *Skill*



Graph 2 displays the histogram of survey responses to the question on perceived opportunity. Again, it is helpful to note that younger respondents (below or around the mean age of 42.99) answered that they did not perceive opportunities for entrepreneurship within their country. On the other hand, the older respondents (above the age of 70) answered more evenly to the survey question.

Graph 2: Histogram of population responses by age on variable *Opport*



The SPSS outputs for the Chi-square tests are reproduced in Appendix III.B. The following are conclusions that can be drawn about the distribution of select variables.

Figure 1 records the Chi-square statistics for *opport* across each of the group variables. Across genders, since the significance value of 0.185 is greater than 0.05, the results indicate that the null hypothesis cannot be rejected and perceived opportunities are distributed normally across genders. Across age groups, household sizes, and education levels, however, since the unanimous significance value of .000 is less than 0.05, the results indicate that the null hypothesis can be rejected and perceived opportunities are not distributed normally across the three group types.

Figure 2 records the Chi-square statistics for *skill* across each of the group variables. Across genders, age groups, household sizes, and education levels, since the unanimous significance value of .000 is less than 0.05, the results indicate that the null hypothesis can be rejected and perceived skills are not distributed normally across the four group types.

Recalling Graph 1 above, these results are congruent with the initial observations on the distribution of responses on *skill* grouped by genders.

Figure 3 records the Chi-square statistics for *fear_fail* across each of the group variables. Across genders, age groups, household sizes, and education levels, since the unanimous significance value of .000 is less than 0.05, the results indicate that the null hypothesis can be rejected and perceived fears of failure are not distributed normally across the four group types.

G. Correlation Matrix of APS Variables

A correlation matrix of the independent variables is shown below. The conditional formatting indicates the strengths (green), neutrality (white), and weaknesses (red) of the correlations.

Matrix 1: Correlation Matrix of Survey Response Data

	Constant	gender	age	hh_size	equal_Inc	good_career	high_status	media_cov	uneduc	occu	ownmge	HDI_2	HDI_3	pol_syst_2	pol_syst_3	pol_syst_4
Constant	1.000															
gender	-0.433	1.000														
age	-0.542	0.015	1.000													
hh_size	-0.246	-0.023	0.162	1.000												
equal_Inc	-0.145	-0.044	0.004	0.003	1.000											
good_career	-0.099	0.017	0.035	0.003	-0.072	1.000										
high_status	-0.206	0.012	0.003	0.012	-0.010	-0.189	1.000									
media_cov	-0.061	-0.007	-0.040	-0.016	-0.062	-0.112	-0.141	1.000								
uneduc	-0.492	0.043	0.062	0.032	0.142	0.038	-0.006	-0.059	1.000							
occu	-0.027	0.019	-0.014	-0.003	0.057	-0.011	-0.038	0.014	0.015	1.000						
ownmge	-0.042	0.083	-0.020	-0.019	0.026	-0.002	-0.015	0.019	0.005	0.123	1.000					
HDI_2	-0.452	0.011	0.145	-0.220	-0.093	-0.053	0.002	-0.027	0.198	-0.030	-0.029	1.000				
HDI_3	0.119	0.010	0.029	0.143	0.051	0.012	0.025	0.051	-0.050	0.028	0.033	-0.450	1.000			
pol_syst_2	-0.387	-0.005	0.033	-0.172	-0.017	-0.123	0.008	-0.069	0.124	-0.041	-0.049	0.638	-0.441	1.000		
pol_syst_3	-0.034	-0.020	0.001	-0.029	0.040	0.026	-0.025	-0.103	0.145	-0.003	-0.066	0.037	-0.746	0.032	1.000	
pol_syst_4	-0.010	0.065	0.068	-0.152	0.072	0.023	-0.040	0.070	-0.073	-0.282	-0.078	0.030	-0.016	0.023	-0.288	1.000

Note: ECON_DEV omitted because of restriction on degrees of freedom

While the majority of correlations between variables are not particularly strong, there are some notable exceptions that present possible concerns about interactions among independent variables. First, *hh_size* and *age* are slightly positively correlated. This result is somewhat expected, since hh_size presumably increases as the adults get older and have more children. Second, there are some strongly positive and negative correlations between the indicator

variables. As shown in Section V.B and C, there is no regression that contains HDI and POL_SYST indicator variables. Therefore, the strong correlations between indicators variables has no significance regarding the interaction between independent variables. Third, there is an unexpected slightly negative correlation between *high_status* and *good_career*. Logically, if an adult thought that entrepreneurship represented a good career choice, he or she would also hope that successful entrepreneurs in the country were given a high level of respect. Fourth, there is also an unexpected slightly negative correlation between *hh_size* and HDI_2. This correlation could mean that respondents in the second HDI tier (Israel, United Kingdom, and Peru) all have smaller households by coincidence, but does not constitute a significant concern. Finally, *gender* and *ownmge* are slightly positively related, indicating there is a slight correlation between a respondent being male and a manager of a venture. Overall, while there are some small correlations between independent variables, there does not appear to be any significant concern for interactions among independent variables for the purposes of our model. An enlarged copy of the Matrix can be found in Appendix VII.

IV. Theoretical Framework

This paper addresses entrepreneurship from the individual startup level. Economists have yet to develop and standardize a modern theory on entrepreneurship at the firm level. The past 200 years of research on the topic has been primarily focused on constructing models which explain entrepreneurship activity within this area of economics. However, there is a noticeable lack of consensus. Because a universal theory on entrepreneurship has yet to be standardized, most researchers use past or unique *conceptual*, as opposed to *theoretical*, frameworks in order to operationalize models that can be tested empirically.

Past conceptual frameworks on entrepreneurship guide the construction of empirical tests in almost all studies relevant to entrepreneurship. The frameworks created by Gartner (1985) and Lumpkin and Dess (1996) are the building blocks for research in this area. To revisit these conceptual frameworks, both studies agree that there are four main areas of success for new firms: variables relating to the manager(s), organization, firm performance, and environment (Gartner, 1985). Both of the conceptual frameworks seek to explain the performance of firms as a result of individual, organizational, and environmental variables. These conceptual frameworks provide general intuition behind the effects of environmental factors, they are not primarily concerned with the relationship between the social, cultural, and political context within which an entrepreneur acts. His conceptual area on environmental factors is synonymous with the macroeconomic effects we are concerned with. While the empirical estimation of variables relevant to characteristics on the management, organization, and firm performance is contingent on survey data, empirical estimation of environmental variables comes from readily accessible macroeconomic data in the GEM. While the conceptual frameworks developed by Gartner and Lumpkin and Dess served as the building blocks for most other conceptual models, there is a better way to connect my research to economic theory.

The link between entrepreneurship and institutional economic theory can be formed by instead considering the conceptual framework included by the 2014 GEM Annual Report. To revisit this framework, the GEM revised a past framework and created a model with the origination of entrepreneurship starting at the "Social, Cultural, Political, and Economic Context" of a country. These environmental effects then cause the social values and individual attitudes towards entrepreneurship in a country, thereby influencing entrepreneurial activity. The key bridge to a theoretical framework here is that "the major tenet of institutional theory is that

institutions shape activity and behavior" (Chowdhurry, 2014). These institutions are not just governments, but social structures, cultural norms, and economic systems. Institutional theory shapes the study of behavioral economics heavily. Therefore, if entrepreneurship is studied from this perspective, rather than from the perspective of performance, there is clear relevance to reputable underlying theory. Again, as Chowdhurry states, "This suggests that entrepreneurs will adapt their activities and strategies to fit the opportunities, limitations, and resources available through the formal and informal institutions," (Chowdhurry, 2014). In my analysis, I explore 11 sets of formal and informal institutions: income inequality, social acceptance of entrepreneurship as a good career path, social status of entrepreneurs, media attention, government form, economic regime, economic crisis or distress, economic development, tax rate, availability of financing, and human capital.

V. Empirical Specification

Section V seeks to develop and operationalize a select group of regression models, empirically test various data sets, and understand the entrepreneurial ecosystem within a country. First, since there are a variety of ways to predict and quantify an entrepreneurial ecosystem, Part A presents multiple regression models which this paper subsequently employs in Part B, C, and D. Part E explains the limitations robustness of the models. Part F discuss how the adult responses complement or diverge from expert responses of the NES dataset. Part G summarizes any significant or unexpected findings of the results. Finally, Part H compares my results to general findings of previous studies.

A. Binary Logistic Regression Models

Binary probit or logistic regression models are useful for predicting whether something does or does not occur. A probit model is a type of binary classification model, meaning that the dependent variable is a binary response variable, assuming the probabilities for the dependent variable are distributed with a cumulative normal distribution. A logistic model is similar to the probit, but instead assumes the probabilities for the dependent variable are distributed lognormally. This model is used widely throughout other areas of economics, for instance, in consumer economics where the model predicts whether a consumer makes a purchase or not. In a typical multiple regression model, such as ordinary least squares estimation (OLS), the dependent variable is usually a continuous variable. However, in the probit regression model, the models predicts the probability that the dependent variable equals 1, as shown below.

Normal multiple regression model:

$$y = \beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k + u \quad (1)$$

Probit regression model:

$$E(y|\boldsymbol{x}) = \beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k \quad (2)$$

$$P(y = 1|\boldsymbol{x}) = \beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k \quad (3)$$

For the purposes of this paper, if the expected value of the dependent variable is predicted as 1, a particular entrepreneur would answer “yes” to a “yes or no” question that evaluates perceived capabilities, opportunities, and fear of failure. On the other hand, if the expected value is predicted as 0, the startup fails. Employing a binary approach to data analysis for entrepreneurial perception provides important insight for a variety of reasons. One’s perception of their

capabilities, opportunities, and fear of failure is only recorded in a binary fashion within the GEM APS dataset. Based on the conceptual frameworks described in past research, for simplification sake it is possible to create a logistic regression model with covariates specific to a country's environment.

Instead, this research aims to estimate a model based on the following binary logistic regression for each of the three dependent variables in turn:

$$Opport/Skill/Fear\_Fail_{\,i} = \beta_0 + \beta_1 gender + \beta_2 age + \beta_3 hh_{size} + \beta_4 equa\, l_{inc} + \beta_5 good_{career} + \beta_6 high_{status} + \beta_7 media_{cov} + \beta_8 uneduc + \beta_j [Dummy\ variables] + u$$

The following table outlines the possible dependent and independent variable relationships for the binary logistic model:

	Dependent Variables			Explanation of Rationale
	opport	*skill*	*fear_fail*	
equal_inc	+ / -	+	-	Preference for income equality should not affect perceptions of opportunity. However, entrepreneurs may consider themselves better equipped with the skills necessary to succeed if there exists and even financial playing field. Oppositely, one's fear of failure should decrease if everyone has more of the same resources at their disposal.
good_career	++	+/-	--	If people in a country consider entrepreneurship a desirable career path, then many more people would perceive there to be greater entrepreneurship opportunities present. This question has an unclear effect on skills, as the question is not directly addressing the topic. Conversely, fear of failure would be higher if entrepreneurship is not considered a good career choice.

	Dependent Variables			Explanation of Rationale
	opport	*skill*	*fear_fail*	
high_status	++	+ / -	-	If entrepreneurs in a country have high status among their peers, perceptions of opportunities would likely have a highly positive relationship because of the attractiveness of the career. This question has an unclear effect on skills, as the question is not directly addressing the topic. Conversely, fear of failure would decline if there are examples of successful entrepreneurs respected by the community.
media_cov	++	++ / -	--	Media attention would increase the amount of times the public associates success with entrepreneurship, bolstering perceived opportunities from the career path. Even though the question does not address skills directly, many people may become overzealous about their skill set from media coverage. Conversely, fear of failure would have a highly negatively relationship.
HDI_# (Dummy Variable)	?	?	?	The influence of HDI ranking on each dependent variable will be gained from the regression results.
POL_SYST_# (Dummy Variable)	?	?	?	While it is possible to make reasonable assumptions on the effect of political system on entrepreneurial perceptions, this relationship is largely understudied or unclear and worthy of further analysis.
ECON_DEV (Dummy Variable)	?	?	?	The influence of whether a country has a stable, largely privatized economy as opposed to transitional economy on each dependent variable will be gained from the regression results.
gender	+/-	+/-	+/-	It is largely unclear what effect gender really has on entrepreneurial perceptions. In countries' business cultures that are still predominately male orientated, there may be differing effects.
age	++	++	--	As age increases, perceived opportunities become greater. Also, people generally develop better skill sets as time goes on and therefore would be more confident in their own human capital. The opposite is likely true for one's fear of failure.
uneduc	++	++	--	Increase education has the same effects as age and the two variables are likely to be highly correlated.

	Dependent Variables			Explanation of Rationale
	opport	*skill*	*fear_fail*	
hh_size	+	+	--	The effect on household size is most likely positively related with *opport* and *skill*, and negatively with *fear_fail*. For instance, an entrepreneur could have more positive perceptions with a smaller household since he or she will have less risk associated with the profession.
occu	+ / -	+ / -	+ / -	Since the variable *occu* is the ranking that entrepreneur give to their occupational level, with 1 being high occupational level and 6 being a full-time student, there would be conflicting effects. Higher occupational level presumably indicates high education level, which is positively related to *opport* and *skill*, and negatively with *fear_fail*. However, someone highly committed to their occupation would be less likely to pursue an entrepreneurial activity.
ownmge	++	++	--	If a respondent is already the manager of a venture, there would likely be a positive relationship between *ownmge* and *opport* or *skill*, and a negative relationship with *fear_fail*.

(+) = Positive effect of independent variable on dependent variable, (++) = Strongly positive

(-) = Negative effect of independent variable on dependent variable, (--) = Strongly negative

A full explanation of the variables is included in Appendix I. These relationships are based on my own intuition and existing empirical findings regarding the ceteris paribus effects of independent variables on the dependent variables. Short explanations for the rationale behind each is provided in the right column. The empirical estimation in Section VI manipulates the above binary logistic regression model to include the optimal number of each category of covariates.

B. Explaining Entrepreneurial Perceptions Based on HDI Tier

The following section reviews the regression output for the pooled nine countries in the analysis, namely United States, Japan, Switzerland, Israel, United Kingdom, Peru, Russian Federation, Islamic Republic of Iran, and China. The previous discussion in Section V.A remarked on what the expected results of the regression should be based on intuition and past research. In this section, the results from the logistic regressions are presented and conclusions drawn. At the end of Part B, I summarize my findings and assess whether they confirm my predictions in Part A. In Part E and after the discussion of alternative regressions in Part C and D, I discuss the limitations and robustness of all regressions.

As discussed in Section V, Part A, my regressions for the GEM 2010 APS Dataset consist of using a binary logistic regression since all three of the dependent variables, namely *opport*, *skill*, and *fear_fail* have one of two values indicating a response of either "no" or "yes". For each dependent variable, I discuss whether the coefficients of the significant independent variables were expected or unexpected based on my predictions in Part A. Since I am utilizing a binary logistic regression analysis, I consider the odds ratios of certain independent variables to supplement discussion of the coefficients, which are in terms of log-odds units. Therefore, I discuss the results of the three regression analyses, starting with the analysis of an entrepreneur's perceived opportunities.

1. **Binary Logistic Regression for *Opport***

$$Opport_i = \alpha_0 + \alpha_1 gender + \alpha_2 age + \alpha_3 hh_{size} + \alpha_4 equal_{inc} + \alpha_5 good_{career} + \alpha_6 high_{status} + \alpha_7 media_{cov} + \alpha_8 uneduc + \alpha_9 HDI\_2 + \alpha_{10} HDI\_3 + u$$

Table 1 displays the regression results for the variable *opport*, indicating a response to the question "In the next six months, will there be good opportunities for starting a business in the area where you live?". As shown by Table 1, we know that all variables are significant predictors of an entrepreneur's perceived short-term opportunities except for *equal_inc*, which is not significant at the 5% level.

Table 1:
Regression Results for Perceived Opportunity

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	-0.133*	0.031	0.000	0.875
age	-0.012*	0.001	0.000	0.988
hh_size	0.043*	0.009	0.000	1.044
equal_Inc	0.035	0.032	0.278	1.036
good_career	0.455*	0.034	0.000	1.576
high_status	0.241*	0.038	0.000	1.273
media_cov	0.447*	0.034	0.000	1.564
uneduc	0.045*	0.009	0.000	1.046
occu	0.000	0.001	0.676	1.000
ownmge	0.182*	0.025	0.000	1.199
HDI_2	0.647*	0.040	0.000	1.909
HDI_3	-0.368*	0.040	0.000	0.692
Constant	-1.450*	0.103	0.000	0.235

*Coefficient estimates are significant at the 5% level

Model 1 Summary Output				
N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	67.8	24443.977 a	0.063	0.087

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

The results of the interaction between significant independent variables and an entrepreneur's perceived opportunity are interesting. To be concise, I have ordered the top-five significant interactions based on the odds ratios of the coefficient estimates and discuss their relationship to the dependent variable *opport*. From this model, the presence of a respondent being located in a country of the second HDI tier (Israel, the United Kingdom, and Peru) has a strongly positive relationship ($\beta = 0.647^*$) with perceived opportunities. This interaction, compared to the other indicator variables, is expected. All three of these countries are well-developed and stable. Even though one may have expected the constant to be more positive and have a larger odds ratio, the first tier based on HDI (United States, Japan, and Switzerland) is comprised of countries with significant differences in social and political contexts, especially with regards to Japan. Based on the coefficient of *good_career* ($\beta = 0.455^*$), if an individual believes that public opinion encourages entrepreneurship as a good career choice, the entrepreneur is likely to perceive more opportunities which I predicted earlier. Similarly, if there is more media coverage (*media_cov*) in the respondent's country, the entrepreneur is more likely to perceive greater opportunities ($\beta = 0.447^*$), as predicted. The variable *high_status* shows that there is a positive relationship with entrepreneurs having a high level of respect and perceptions of opportunities in that country ($\beta = 0.241^*$), as predicted. The coefficient of *ownmge* ($\beta = 0.182^*$) indicates that a respondent who is already the manager of a venture perceives greater opportunities, as predicted.

There are a few unexpected or peculiar results as well. For instance, the coefficient for *gender* is moderately negative relative to other interactions, indicating that men perceive less entrepreneurial opportunities in these nine countries. It is also unexpected that the coefficient for *occu* is not significant at the 5% level, since the employment status of the respondent would have presumably had an effect on perceived opportunities. If a respondent is unemployed or partially employed, one might expect the individual to be overly optimistic about the opportunity to create their own business from lack of other employment options.

2. Binary Logistic Regression for *Skill*

$$Skill_i = \beta_0 + \beta_1 gender + \beta_2 age + \beta_3 hh_{size} + \beta_4 equal_{inc} + \beta_5 good_{career} + \beta_6 high_{status} + \beta_7 media_{cov} + \beta_8 uneduc + \beta_9 HDI\_2 + \beta_{10} HDI\_3 + u$$

Table 2 displays the regression results for the variable *skill*, indicating a response to the question “Do you have the knowledge, skill, and experience required to start a new business?”. As shown by Table 2, all variables are significant predictors of an entrepreneur’s perceived skill except for *age*, which is not significant at the 5% level.

Table 2:
Regression Results for Perceived Skill

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	-0.580*	0.030	0.000	0.560
age	0.000	0.001	0.713	1.000
hh_size	0.050*	0.009	0.000	1.051
equal_Inc	-0.135*	0.031	0.000	0.874
good_career	0.384*	0.032	0.000	1.468
high_status	0.276*	0.036	0.000	1.317
media_cov	0.243*	0.032	0.000	1.276
uneduc	0.125*	0.009	0.000	1.133
occu	0.016*	0.001	0.000	1.016
ownmge	1.099*	0.042	0.000	3.002
HDI_2	0.534*	0.038	0.000	1.706
HDI_3	-0.401*	0.040	0.000	0.669
Constant	-0.852*	0.098	0.000	0.427

*Coefficient estimates are significant at the 5% level

Model 2 Summary Output

N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	63.9	25600.765 a	0.112	0.15

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

As with the discussion of model 1, there are several results from this regression which confirm my predictions about the determinant of an entrepreneur's perceptions of skill. For the sake of succinctness, I interpret the top-six significant interactions of the independent variables on *skill* based on the odds ratios of the coefficient estimates. The coefficient of *ownmge* is strongly positive, with an extremely large odds ratio, indicating that if an entrepreneur is already the manager of a venture, the individual perceives themselves more competent in their skills. This relationship confirms earlier prediction and makes logical sense since someone who has

already proven to have the skills necessary in becoming a manager of a venture would have affirmation of their skill set.

As found in model 1, the location of a respondent in the second tier of countries based on HDI (Israel, the United Kingdom, and Peru) results in more optimistic entrepreneur perceptions and, in this case, a perception of greater skill and ability to succeed in creating a new venture. The coefficient of HDI_3 is negative and significant, a result which is aligned with the prediction that less developed countries are less able to endow their citizens with the skills necessary in venture creation.

The coefficient of *good_career* is moderately positive, indicating that if a respondent believes that other people are supportive of entrepreneurship as a career choice, the entrepreneur is more likely to consider themselves skilled enough to succeed. In my predictions, this relationship was uncertain. However, if a respondent lives in a country where the majority of the population supports entrepreneurship as a viable career option, there is probably more infrastructure devoted to developing the entrepreneurial skills of its citizens and greater likelihood a respondent had those necessary skills. The coefficients of *high_status* and *media_cov* are also moderately positive, a result which agrees with the logic behind the effect of *good_career.* That is, if a respondent lives in a country where entrepreneurs are given high respect and there is frequent media coverage about these successful entrepreneurs, the respondent probably also exists in a country that has the capabilities to cultivate them to be a successful entrepreneur.

Lastly, the coefficient of *uneduc* is moderately positive and significant, indicating a positive relationship between higher education and greater perceived skills. This relationship is probably the most predictable, since higher education should increase the human capital of the

respondent and result in a more optimistic perception of ability to succeed given the individual's skill set. Even though the education is specifically related to entrepreneurship, more education respondents should have greater confidence in their skill set.

There are two unexpected results of model 2. The coefficient of *gender* is moderately negative and significant, indicating a negative relationship between gender and perceived skill. This interaction is peculiar as it suggests that males across the 9 countries are less confident in their entrepreneurial skills. The expected result would be that the coefficient of *gender* is more neutral, since there is no previous literature suggesting there is a significant negative relationship. Second, the coefficient of *age* is unexpectedly not significant at the 5% level. As my earlier predictions indicate, this relationship should have been negative and significant. Intuitively, as the age of an entrepreneur increases, so too does the individual's education, and would therefore influence an entrepreneur to perceive more capable with regards to necessary entrepreneurial skills.

3. Binary Logistic Regression for *Fear_Fail*

$$Fear\_Fail_{\,i} = \gamma_0 + \gamma_1 gender + \gamma_2 age + \gamma_3 hh_{size} + \gamma_4 equal_{inc} + \gamma_5 good_{career} + \gamma_6 high_{status} + \gamma_7 media_{cov} + \gamma_8 uneduc + \gamma_9 HDI\_2 + \gamma_{10} HDI\_3 + u$$

Table 3 displays the regression results for the variable *fear_fail*, indicating a response to the question "Would fear of failure prevent you from starting a business?". From the p-values in Table 3, the variables gender, age, good_career, high_status, HDI_2, and our constant are significant predictors of *fear_fail*. The variables hh_size, equal_inc, media_cov, HDI_3, and uneduc are not significant at the 5% level.

Table 3:
Regression Results for Perceived Fear of Failure

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	0.184*	0.029	0.000	1.202
age	-0.007*	0.001	0.000	0.993
hh_size	0.012	0.009	0.174	1.012
equal_Inc	0.044	0.030	0.133	1.045
good_career	-0.090*	0.031	0.003	0.914
high_status	0.230*	0.034	0.000	1.258
media_cov	0.038	0.031	0.211	1.039
uneduc	0.002	0.008	0.825	1.002
occu	0.004*	0.001	0.001	1.004
ownmge	-0.085*	0.023	0.000	0.919
HDI_2	0.230*	0.036	0.000	1.258
HDI_3	-0.030	0.038	0.426	0.970
Constant	-0.211*	0.094	0.024	0.810

*Coefficient estimates are significant at the 5% level

Model 3 Summary Output

N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	55.7	27687.928 a	0.014	0.018

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

Compared to the previous two models, there are far fewer significant predictors of an entrepreneur's fear of failure. However, there are some notable exceptions. The coefficient of HDI_2 is positive and significant, indicating that respondents in the second tier of countries based on HDI (Israel, United Kingdom, and Peru) perceive a higher fear of failure in starting a new venture. The constant of the regression, which contains the interaction between a respondent being in the top tier of HDI (United States, Japan, and Switzerland) and their fear of failure, is negative and significant. While one conclusion is that more developed countries have

respondents that are more immune to fear of failure, the entrepreneurial cultures of the United States and Japan are presumably drastically different, a fact that makes this constant difficult to draw definite conclusions from. Japan has historically maintained a business culture that largely dissuades it citizens from pursuing entrepreneurial careers, and it is possible that this factor is influencing the overall results for HDI 1.

The coefficient of *occu* is slightly positive, interpretable as there being a positive relationship between greater occupational status and fear of failing from starting a venture. This relationship is expected. If an individual possesses a secure job and form of income, this probably makes them more risk averse at least to entrepreneurship, corresponding to a higher fear of failing if they were to leave their job.

The coefficient of *age* is slightly negative and significant, indicating that older respondents are less influenced by a fear of failing. This relationship is expected and intuitive, since as age increases, so too does the education and experience of the entrepreneur, reducing one's fear of failing. The coefficient of *good_career* is slightly negative, indicating that if there is better public sentiment regarding entrepreneurship as a career choice, individuals are more immune to a fear of failing. This interaction is expected and makes logical sense. For instance, if a country has a population that is receptive and more nourishing to entrepreneurs, less respondents would fear the ultimate failure of a business venture. However, there is a possibility that the opposite case is true, and that greater acceptability of entrepreneurship results in higher competition for early-stage entrepreneurs, therein causing a higher fear of failure. The former case appears to be true at least for this dataset. Finally, the coefficient of *ownmge* is moderately positive and significant. This indicates a negative relationship between a respondent being a current manager of a venture and their fear of failing in starting a business. The negative

relationship is expected and easily justified since an individual who has already succeeded in starting a venture in their country would have less fear in doing it again.

Model 3 has a few unexpected results, some stemming from directionality of relationship. For instance, there appears to be a positive relationship between *high_status* and *fear_fail*. Respondents in countries where entrepreneurs are highly respected should presumably cause nascent entrepreneurs to perceive a lower fear of failure since there are positive examples of success around them. Additionally, the coefficient of *gender* is positive and significant. This positive relationship can be interpreted as males perceiving a higher fear of failure and is an unexpected results. In previous studies, results have indicated that men are more risk prone, thus the expected relationship would have been negative.

C. Explaining Entrepreneurial Perceptions Based on Political Systems

There are other options for how to separate the 9 countries with the addition of dummy variables. In Part C and D, I introduce two other dummy variables into the equation, *pol_syst* and *econ_dev*. The variable *pol_syst* is a dummy variable which indicates whether or not a country adheres to one of the following political systems: monarchy (Israel, Japan, United Kingdom), democracy (United States, Switzerland, Peru, and Russia), socialism (China), or theocracy (Iran). This substitution of indicator variables is warranted for a few reasons. First, HDI ranking is not the only way to pool countries. Grouping countries based on political system can identify relationships between general political values and sentiments that can influence entrepreneurial perceptions significantly. Second, and an indirect benefit of the first justification, this group of indicator variables separates countries that have similar HDI ranking but drastically different political and cultural values (i.e. United States and Japan).

Besides the change in indicator variables, the other independent variables are identical those in the regressions of Part C and D. Unless otherwise later noted in Part G, the relationships of the non-indicator independent variables to the dependent variables parallel those in Part B. Thus, to avoid redundancy, I only focus on the interaction between the new indicator variables and the dependent variables.

$$Opport/Skill/Fear\_Fail_{\ i} = \gamma_0 + \gamma_1 gender + \gamma_2 age + \gamma_3 hh_{size} + \gamma_4 equal_{inc} + \gamma_5 good_{career} + \gamma_6 high_{status} + \gamma_7 media_{cov} + \gamma_8 uneduc + \gamma_9 POL\_SYST\_2 + \gamma_{10} POL\_SYST\_3 + \gamma_{11} POL\_SYST\_4 + u$$

Table 4 displays the regression results for the variable *opport.* Considering only the dummy variables for *pol_syst*, all variables are statistically significant besides *pol_syst_4*, which is not a significant predictor of *opport* at the 5% level. The constant in this regression equals -1.427 with a p-value of 0.000. The coefficient for *pol_syst_2*, the democratic group of countries, equals 0.712 with a p-value of 0.000, suggesting that respondents in democracies are likely to perceive more opportunities. The β for *pol_syst_3*, the socialist group of countries which only contains China, equals -0.244 with a p-value of 0.000, suggesting that respondents in China may perceive less opportunities. The β for *pol_syst_4*, the theocratic group of countries which only contains Iran, equals 0.057 with a p-value of 0.346, and is therefore not a significant predictor of *opport*. The groups *pol_syst_3* and *pol_syst_4*, comprised of a single country, may not accurately represent how a political system influences perceptive opportunities, as well as the variables *skill* and *fear_fail*,

Table 4:
Regression Results for Perceived Opportunity

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	-0.143	0.031	0.000	0.867
age	-0.014	0.001	0.000	0.986
hh_size	0.057*	0.009	0.000	1.058
equal_Inc	0.143*	0.032	0.000	1.154
good_career	0.359*	0.034	0.000	1.432
high_status	0.247*	0.039	0.000	1.280
media_cov	0.394*	0.034	0.000	1.483
uneduc	0.035*	0.009	0.000	1.036
occu	-0.001	0.001	0.355	0.999
ownmge	0.149*	0.025	0.000	1.161
POL_SYST_2	0.712*	0.039	0.000	2.039
POL_SYST_3	-0.244*	0.048	0.000	0.784
POL_SYST_4	0.057	0.061	0.346	1.059
Constant	-1.427*	0.100	0.000	0.240

*Coefficient estimates are significant at the 5% level

Model 4 Summary Output

N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	67.7	24364.440 a	0.066	0.092

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

Table 5 displays the regression results for the variable *skill.* Considering only the dummy variables for *pol_syst*, all variables are significant predictors of *skill* at the 5% level. The constant equals -0.944 with a p-value of 0.000. The coefficient for *pol_syst_2*, the democratic group of countries, equals 0.666 with a p-vale of 0.000, suggesting that respondents in democracies are likely to perceive themselves as being more capable. The β for *pol_syst_3*, the socialist group that only contains China, equals -0.434 with a p-value of 0.000, suggesting that respondents in

China may perceive themselves as being less capable given their skills. The coefficient for *pol_syst_4*, the theocratic group that only contains Iran, equals 0.723 with a p-value of 0.000, suggesting that respondents in Iran perceived themselves to be relatively more capable based on their skills.

Table 5:
Regression Results for Perceived Skill

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	-0.581*	0.030	0.000	0.559
age	-0.001	0.001	0.365	0.999
hh_size	0.045*	0.009	0.000	1.046
equal_Inc	0.004	0.031	0.896	1.004
good_career	0.293*	0.033	0.000	1.341
high_status	0.262*	0.036	0.000	1.299
media_cov	0.210*	0.033	0.000	1.233
uneduc	0.121*	0.009	0.000	1.128
occu	0.010*	0.001	0.000	1.010
ownmge	1.018*	0.042	0.000	2.767
POL_SYST_2	0.666*	0.036	0.000	1.946
POL_SYST_3	-0.434*	0.048	0.000	0.648
POL_SYST_4	0.723*	0.063	0.000	2.062
Constant	-0.944*	0.096	0.000	0.389

*Coefficient estimates are significant at the 5% level

Model 5 Summary Output

N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	66.0	25325.375 a	0.124	0.166

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

Table 6 displays the regression results for the variable *fear_fail.* Considering just the dummy variables for *pol_syst*, only the variables *pol_syst_2* and *pol_syst_3* are significant

predictors of *skill* at the 5% level. The constant equals 0.105 with a p-value of 0.246 and is therefore not a significant predictor of *skill*. The coefficient for *pol_syst_2*, the democratic group of countries, equals -0.317 with a p-vale of 0.000, suggesting that respondents in democracies are less likely to be prevented by a fear of failure. The coefficient for *pol_syst_3*, the socialist group that only contains China, equals 0.108 with a p-value of 0.017, suggesting that respondents in China may perceive a greater fear of failure. The β for *pol_syst_4*, the theocratic group only contains Iran, equals 0.723 with a p-value of 0.058 and is therefore not significant at the 5% level.

Table 6:
Regression Results for Perceived Fear of Failure

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	0.185*	0.029	0.000	1.203
age	-0.008*	0.001	0.000	0.992
hh_size	0.019*	0.009	0.026	1.020
equal_Inc	0.048	0.030	0.102	1.049
good_career	-0.033	0.031	0.281	0.967
high_status	0.244*	0.034	0.000	1.277
media_cov	0.054	0.031	0.078	1.056
uneduc	-0.009	0.008	0.260	0.991
occu	0.004*	0.001	0.000	1.004
ownmge	-0.070*	0.023	0.003	0.932
POL_SYST_2	-0.317*	0.034	0.000	0.728
POL_SYST_3	0.108*	0.046	0.017	1.114
POL_SYST_4	0.046	0.058	0.431	1.047
Constant	0.105	0.091	0.246	1.111

*Coefficient estimates are significant at the 5% level

Model 6 Summary Output				
N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	55.5	27647.126 a	0.016	0.021

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

D. Explaining Entrepreneurial Perceptions Based on Economic Development

The variable *econ_dev* is a dummy variable which indicates whether or not a country's economy is fully privatized and structurally sound (i.e. lacks major state-owned enterprises and corruption) or transitional (i.e. moving towards a privatized and structurally sound economy). The countries in the privatized group are the United States, Japan, Switzerland, Israel, the United Kingdom, and Peru, whereas the countries in the transitional group are Russia, Iran, and China. Compared to the pooling of countries based on HDI and political system, this grouping of countries is informative because it isolates the effect of three economies (Russia, Iran, and China) that are in the transitional phase of becoming more stable, privatized, or both.

$$Opport/Skill/Fear\_Fail_{\ i} = \gamma_0 + \gamma_1 gender + \gamma_2 age + \gamma_3 hh_{size} + \gamma_4 equal_{inc} + \gamma_5 good_{career} + \gamma_6 high_{status} + \gamma_7 media_{cov} + \gamma_8 uneduc + \gamma_9 econ\_dev + \gamma_{10} ECON\_DEV + u$$

Table 7 displays the regression results for the variable *opport.* The constant in the regression and *econ_dev* are both significant predictors of *opport* at the 5% level. The constant equals -1.033 with a p-value of 0.000. The coefficient for *econ_dev* equals -0.085 with a p-value of 0.019, suggesting that the transitional countries allow for less opportunities compared to developed countries.

Table 7:
Regression Results for Perceived Opportunity

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	-0.139*	0.031	0.000	0.870
age	-0.015*	0.001	0.000	0.986
hh_size	0.062*	0.009	0.000	1.064
equal_Inc	0.100*	0.032	0.002	1.105
good_career	0.463*	0.034	0.000	1.588
high_status	0.259*	0.038	0.000	1.296
media_cov	0.431*	0.034	0.000	1.539
uneduc	0.027*	0.009	0.002	1.027
occu	0.000	0.001	0.675	1.000
ownmge	0.182*	0.025	0.000	1.200
ECON_DEV	-0.085*	0.036	0.019	0.919
Constant	-1.033*	0.098	0.000	0.356

*Coefficient estimates are significant at the 5% level

Model 7 Summary Output

N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	67.1	24711.460 a	0.05	0.07

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

Table 8 displays the regression results for the variable *skill.* The constant in the regression and *econ_dev* are both significant predictors of *skill* at the 5% level. The constant equals -0.519 with a p-value of 0.000. The coefficient for *econ_dev* equals -0.152 with a p-value of 0.019, suggesting that respondents in the transitional group also perceived themselves as being less capable given their skills.

Table 8:
Regression Results for Perceived Skill

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	-0.581*	0.030	0.000	0.559
age	-0.003*	0.001	0.013	0.997
hh_size	0.065*	0.009	0.000	1.067
equal_Inc	-0.079*	0.031	0.010	0.924
good_career	0.389*	0.032	0.000	1.475
high_status	0.292*	0.036	0.000	1.339
media_cov	0.230*	0.032	0.000	1.258
uneduc	0.109*	0.009	0.000	1.115
occu	0.016*	0.001	0.000	1.016
ownmge	1.089*	0.042	0.000	2.972
ECON_DEV	-0.152*	0.036	0.000	0.859
Constant	-0.519*	0.095	0.000	0.595

*Coefficient estimates are significant at the 5% level

Model 8 Summary Output

N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	64.0	25798.978 a	0.104	0.138

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

Table 9 displays the regression results for the variable *fear_fail.* The variable *econ_dev* is statistically significant, but the constant is not a significant predictor of *fear_fail* at the 5% level (p-value = 0.439). The coefficient for *econ_dev* equals 0.078 with a p-value of 0.021, suggesting that respondents in the transitional group perceive a higher fear of failure.

Table 9:
Regression Results for Perceived Fear of Failure

Variable	Coefficient Estimate	Standard Error	P-Value (5% Level)	Odds Ratio
gender	0.181*	0.029	0.000	1.198
age	-0.008*	0.001	0.000	0.992
hh_size	0.018*	0.009	0.031	1.019
equal_Inc	0.068*	0.029	0.020	1.071
good_career	-0.087*	0.031	0.004	0.917
high_status	0.238*	0.034	0.000	1.268
media_cov	0.033	0.031	0.279	1.034
uneduc	-0.005	0.008	0.556	0.995
occu	0.004*	0.001	0.001	1.004
ownmge	-0.085*	0.023	0.000	0.919
ECON_DEV	0.078*	0.034	0.021	1.081
Constant	-0.070	0.091	0.439	0.932

*Coefficient estimates are significant at the 5% level

Model 9 Summary Output

N	% Predicted/Observed	-2 log likelihood	Cox-Snell R^2	Nagelerke R^2
14867	55.5	27728.223 a	0.012	0.016

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001

E. Limitations for Regression Analysis and Robustness

There are some limitations and concerns for the robustness of the regression analysis used. The estimates for the R^2 of each model should be addressed. For each regression on o*pport*, the Nagelerke R^2 estimate is noticeably low, ranging from 0.070 to 0.092, as is the case for each regression on *fear_fail,* ranging from 0.016 to 0.018. The Nagelerke R^2 of regressions on *skill* are significantly higher, ranging from 0.138 to 0.166, values which are not uncommon in logistic regressions of this type.

For the models with R^2 estimates below 0.15, there are areas for improvement regarding my specific models. First, I did not include any interaction effects between independent variables. If these effects had been accounted for, I would expect the R^2 estimates to increase and improve the predictive power of the model. Finally, besides the 10 independent variables and different indicator variables, the models do not take into account every explanatory variable that can influence an entrepreneur's perceptions. By adding other relevant covariates, the R^2 estimates of the models would increase. Finally, a more advanced treatment of the indicator variables could also increase the robustness of the models. Because the indicator variables in these models only categorized 9 countries, a larger pooling of countries to my analysis could make the indicator variables more effective. For instance, the grouping of countries by political system left China (communism) and Iran (theocracy) alone in their group.

As I noted in Section III, certain aspects about the APS and NES datasets could be influencing the robustness and explanatory power of the model. First, since the R^2 estimates are biased estimates, the reduced R^2 could be a result of large sample size, with nearly 15,000 respondents for each regression. Second, the actual categorization of countries based on a surface-level interpretation of their political system and economic development is somewhat crude. If more specific differentiators were used, such as those relating to actual legislation or metrics on stability and privatization, the robustness of the models might improve. Third, the semantics behind each survey question are important. Since the APS and NES datasets are used by researchers for drastically different purposes, the editing of questions to better target my specific interest in entrepreneurial perceptions would be beneficial.

F. Perception versus Expert Opinion: Comparison of APS Results to NES Histograms

The clustered histograms, provided in Appendix VIII, display the total responses for variables in the NES dataset, with groups clustered by HDI tier tanking, political system group, and economic development group as defined in the previous section. Since these results are from experts in the field of entrepreneurship, they should indicate the difference between perceptions of a group's entrepreneurial climate, as shown by results from the APS regression analyses, and the corresponding reality.

The distributions of the NES variables, namely *opport_exist*, *mkt_entry*, and *risk_taking* are intended to serve as the expert-response counterparts to the entrepreneur's perception dependent variables of the APS regressions, *opport*, *skill*, and *fear_fail*, respectively. The distribution of these variables, clustered by the same dummy variables included in the APS regression analysis, allow us to make inferences on the interaction between the dummy variable categories and expert responses, thereby giving a second opinion to the perceptions of the non-experts. It is valid to compare datasets in this way since the binary logistic model for APS uses the log-distribution in estimating the probability of the dependent variable, whereas this comparison would not be valid if the APS dataset was estimated using a linear regression. Additionally, since this is an exploratory analysis of the NES data in comparison to the coefficient estimates, I have included a baseline estimate of the constant the three types of regressions. In order to see the effect on the first group of each category (HDI 1, political system group 1, and economic development 1), the change in the value of the intercept is more important for interpretation than the values of the constants and coefficients themselves. This change illustrates the difference in effects between tiers within a group (i.e. the difference

between HDI 1, HDI 2, and HDI 3). The histograms for the NES expert perceptions is displayed in Appendix VIII.

1. Adult Responses for *Opport* versus Expert Responses for *Opport_exist*

First, considering the three HDI tiers, the expert responses do not validate the APS entrepreneurs' perceptions about opportunities. In the histogram, the experts from HDI group 1 and 3 are skewed right-ward, indicating a more than neutral response to *opport_exist*, which is incongruent with the constant becoming more negative (from -1.103 to -1.450) and the coefficient for HDI_3 also becoming more negative (from 0.647 to -0.368). However, the experts' responses do mirror the entrepreneur responses for HDI group 2. Second, regarding the four political systems, the expert responses somewhat validate the APS entrepreneurs' perceptions as well. Finally, as for both of the groups of economic development, the expert responses validate the responses for the adults, as both histograms are skewed right-ward and both the new constant and coefficient for ECON_DEV become more positive.

2. Adult Responses for *Skill* versus Expert Responses for *Mkt_entry*

Regarding the HDI tiers, the expert responses mirror the adult responses for HDI 1, HDI 3, and arguably HDI 2 as well. The histograms for HDI 1 and HDI 3 are skewed right-ward, congruent with the coefficient estimates of the corresponding dummy variables becoming more negative. As for HDI 2, the expert responses are somewhat ambiguous, but there are more extreme positive responses (yellow bar) than extreme negative responses (blue bar) which is congruent with the corresponding coefficient becoming more positive. Second, all of the histograms for the four political systems are skewed right-ward. This means that for political systems 2 (democracies) and 4 (theocracy), the expert results mirror the adult responses, and that

for systems 1 (monarchies) and 3 (socialism), the results do not. As for economic development, the expert responses validate the adult responses, as both histograms are skewed right-ward and both the new constant and coefficient become more positive.

3. Adult Responses for *Fear_Fail* versus Expert Responses for *Risk_Taking*

For the comparison between *fear_fail* and *risk*_taking, there exists a difference in semantics which make the interpretation of the histograms counter-intuitive. Because of the framing of the question, a positive response for experts (i.e. my country encourages risk-taking) would be the same as a negative response for the adults (i.e. fear of failure would not prevent me from pursuing a venture). For example, regarding the HDI tiers, the expert responses validate the adult responses for HDI 1, since the corresponding histogram is skewed right-ward, whereas the constant becomes more negative compared to the baseline. The responses are not congruent for HDI 2, and HDI 3. The histogram for HDI 2 is skewed right-ward, incongruent with the coefficient estimate of the corresponding dummy variables becoming more positive. The histogram for HDI 3 is skewed left-ward, also incongruent with the coefficient estimate of the corresponding dummy variables becoming more negative, although the coefficient is not significant at the 5% level. Second, the histograms for political systems 1 and 2 mirror the constant and coefficient values, although both the constant and coefficient for the 4^{th} group are not significant at the 5% level. For political system 2, the histogram is clearly skewed right-ward, congruent with the coefficient becoming more negative compared to the new constant. As for economic development, the expert responses validate the adult responses. The histogram for group 1 is skewed right-ward and the new constant becomes more negative, and the histogram for group 2 is skewed left-ward and the coefficient becomes more positive.

G. Interpretation of Significant Findings Between Datasets

In the comparison between results for *opport* (APS) and *opport_exist* (NES), there are some notable findings. When divided by HDI tiers, the experts in all three groups showed significant optimism about the opportunities in each of their countries, displayed by the right-ward skewness of each histogram. However, only adult respondents in HDI 2 countries (Israel, United Kingdom, and Peru) mimicked this same optimism. The right-ward skewness, as expected, is displayed when respondents' countries are divided by political system and economic development. However, the constants and coefficients for those regressions also do not universally mimic the expert responses. Only the group of monarchies, political system 1, and economic development group 2 are similarly optimistic about opportunities as the experts are.

As for the comparison between results for *skill* (APS) and *mkt_entry* (NES), there exists the following unusual discoveries. The differences in results could primarily stem from the fact that the variable *skill* (i.e. Do you have the knowledge, skill and experience required to start a new business?) is not exactly the same survey exercise as for *mkt_entry* (i.e. ranking how difficult it is for a new venture to enter a market), although a positive response for one does suggest a positive response to the other. That is, if an adult felt he or she had the knowledge, skill and experience required to pursue a venture that would indicate a market that is not overly competitive or saturated with more skilled entrepreneurs and not blocked by high barriers to entry. Still, adult respondents in HDI group 1 do share the same marginal pessimism as their experts, which may indicate that in more developed countries, the bar is set higher for entrepreneurs that want to fully pursue a venture. The results for political systems are largely without consequence, except for that respondents under monarchial control share the same marginal pessimism about their entrepreneurial ability as the experts.

Finally, the comparison between results for *fear_fail* (APS) and *risk_taking* (NES) yields interesting results. Similar to the comparison between *skill* and *mkt_entry*, there are some differences in the interpretation of the responses. The variable *fear_fail* measures the binary response to the question "Would fear of failure prevent you from starting a business?", whereas the variable *risk_taking* asks for the validity of the statement "My country promotes risk-taking activities like pursuing a career in entrepreneurship". These questions are posed oppositely, that is, a positive response to *fear_fail* would logically suggest that an expert in that country should respond negatively to *risk_taking* (i.e. record the statement as being somewhat or completely false). As noted in the general discussion of the results, the adults in HDI 1 display a tolerance to a fear of failure which is similar to the experts responding significantly positively to the fact that their countries promote risk-taking behavior. This specific result is peculiar, since the top tier of countries based on HDI is made up of the United States, Japan, and Switzerland, with the clear outlier being Japan, a country historically known for its cultural averseness to risk-taking and risky entrepreneurial ventures. Once the countries are reordered by political system, thereby separating Japan from the United States and Switzerland, the former country's influence on the other two becomes apparent. The expert responses to *risk_taking* in the monarchies (Japan, Israel, and the United Kingdom) become noticeably even, whereas the expert responses in the democracies (United States, Switzerland, Peru, and Russia) are skewed significantly right-ward and congruent with the coefficient estimate for that group.

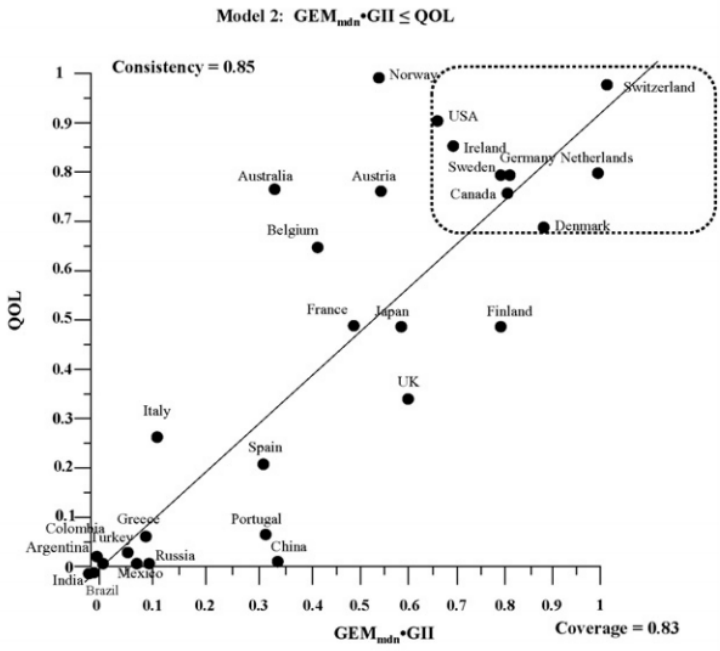
These findings suggest that there is a particular method of studying each dependent variable in the APS regression that yields the most interpretable and significant findings. For instance, as seen in the different groupings of Japan for the comparison between *fear_fail* and *risk_taking*, an adult or expert's response to these questions has less to do with their country's

HDI ranking or economic development, and more to do with the sociopolitical environment that surrounds them. Secondly, there are sometimes limitations with how one can split countries apart. For example, in the general comparison between *opport* and *opport_exist*, there was essentially universal optimism by experts in these 9 countries about the existence of entrepreneurial opportunities, no matter if the countries were grouped by HDI ranking, political system, or economic development. This result illustrates one type of limitation in the graphical analysis performed.

H. Further Connections to Previous Research

The results obtained from the binary logistic regression models from APS and graphical analysis of NES have other general connections to models in previous researcher initiatives. In Section II.C, the portion of my literature review devoted to past research regarding "Global Entrepreneurship Research," I noted that there are several studies which leverage Global Entrepreneurship Monitor datasets, namely Wennekers et al. (2005), Vaillant and Lafuente (2007), Valliere (2008), Wennberg et al. (2013), Chowdhurry et al. (2014), Munoz-Bullon et al. (2015), and Woodside et al. (2015). In the vast majority of cases, the research and estimation in these studies leverages the GEM datasets for national level data and seeks to identify the effect of entrepreneurial perceptions, as well as individual control variables, on economic growth or development.

For instance, Woodside et al. (2015) found a positive relationship between QOL (quality-of-life) and GII (Global Innovation Index), displayed in the linearized regression below:



Source: Woodside et al. (2015), *Industrial Marketing Management*, pg. 150

Within the dotted box indicating high quality-of-life and high country-wide innovation, there are countries such as the United States and Switzerland, both of which are included in my research. Along the regression but at lower states of QOL, this study includes Japan, the UK, China, and Russia. My findings on the comparison between *opport* and *opport_exist,* as well as between *skill* and *mkt_entry* based on HDI ranking are supported by this study. In my discussion of the Human Development Index, I differentiate this index from other indices, such as those which measure quality-of-life. Nevertheless, HDI is a closely related concept to QOL, and my findings are therefore congruent with this model.

The effect of political and economic systems on entrepreneurial behavior in previous studies also supports my findings. For example, in Wennekers et al. (2005), the study's linear regression which explains nascent entrepreneurship in 2002 for the 36 countries included found

that respondents in communist countries have lower levels of entrepreneurial behavior (Wennekers 2005, 304). While I divided countries strictly by political systems, a country's economic regime and political system are closely tied, and this study found a significant negative effect of communism on entrepreneurial perceptions and activity.

In summary, the majority of my results are aligned with previous studies that investigate the relationship between entrepreneurial perceptions and economic growth. As my results indicate, there is a positive relationship between media coverage, education, democratic countries and optimistic entrepreneurial perceptions. In contrast to previous work, male respondents generally proved to be less optimistic in their entrepreneurial perceptions, an unexpected finding worthy of further research.

VII: Conclusion and Suggestions for Future Studies

This paper developed and operationalized a new model for how to explain the core perceptions of entrepreneurs across 9 distinct countries, namely the United States, Japan, Switzerland, Israel, United Kingdom, Peru, Russian Federation, Islamic Republic of Iran, and China. While past literature has incorporated aspects about entrepreneurial perceptions, the importance of the variables has been secondary. In the cycle of economic development, certain entrepreneurial perceptions have been shown to spur entrepreneurial activity, global venture creation, or firm performance. But research has yet to establish a full circle and explain how the social, cultural, and political landscape of a country influence the original perceptions in reciprocity. This research considers the perceptions of nascent entrepreneurs to be of primary importance as they are the seeds of personality traits that drive entrepreneurs towards future success.

The three core perceptions of entrepreneurs are sensitive to their own host of specific factors. This paper found that an entrepreneur's perception of local opportunities can be increased by a society that views entrepreneurship as a good career choice, treats successful entrepreneurs with a high level of respect, and promotes larger amounts of media coverage on entrepreneurship. This paper found that an entrepreneur's perception of ability to succeed with their given skills can be increased by a country that contains more managers of small businesses, increases the education of its population, respects entrepreneurs to a high degree, and promotes media coverage on new ventures. Finally, this paper found that an entrepreneur's fear of failure increases as the individual becomes more occupationally committed, decreases in cultures that consider entrepreneurship a viable career path, decreases as the age of the population increases, and increases as the number of managers in a country increases.

The 9 countries were pooled together in different ways to illustrate the isolated effects of three types of categorization. This paper found that separation of countries based on the Human Development Index resulted in the second tier of countries (Israel, United Kingdom, and Peru) to have entrepreneurs that perceive the most opportunities and internal skill, while it found that the top tier of countries (United States, Japan, and Switzerland) was home to entrepreneurs with the lowest fears of failure across all respondents. This paper found that respondents in democracies perceived more entrepreneurial opportunities, greater ability to succeed based on skill, and lower fears of failure, while respondents in monarchies perceived less opportunities and lower internal skill. Lastly, this paper found that respondents in more privatized, transparent, and economically stable countries exhibited more optimistic perceptions of opportunities, internal skills, and greater immunity to a fear of failing.

The effect of certain individual attributes on an entrepreneur's perceptions were unexpected. For example, my models determined that for respondents in the 9 countries examined, males perceived less entrepreneurial opportunities and considered themselves less able to succeed given their skills. Additionally, the age of a respondent was not always significant in explaining a respondent's perceived skill. Nevertheless, my research resulted in several other statistically significant interactions, some of which are supported by past research, and others that add a new perspective on the body of research.

In my comparison between APS and NES data, I found that ordinary entrepreneurs are sometimes overly optimistic or pessimistic about their existing opportunities, ability to enter a market, and risk aversion. Adult and expert opinions are aligned for those in the second HDI tier with regards to perceived opportunities and existing opportunities, those in global democracies and economically developed countries with regards to perceived skill and actual market entry, and those in the first HDI tier for their responses to perceived fear of failure and risk taking propensity.

My research adds to the existing, but limited, bridge between institutional economics and entrepreneurship, helping further the effort to establish an underlying economic theory for the field. This paper is reliant on two datasets, both of which are reliably collected, incredibly informative, and robust.

There is much more work that can be done to expand my models and further draw a connection between environmental determinants and entrepreneurial perceptions. As an area of further research, others interested in the implications of the change in entrepreneurial perceptions across time could study scenarios in countries before and after an economic downturn caused by overzealous venture creation, like that of the Dot-com bubble in the late 1990's, and analyze the

behavioral differences of entrepreneurs. Furthermore, researchers could also analyze the more targeted impact of new legislation, use of media, and sway of public opinion on these core perceptions and others. Hopefully, by helping explain the full circle of environmental factors and perceptions, my research can be a foundation for other studies to build upon.

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Appendix I: Explanation of Variables in Binary Logistic Regression Model

Dependent Variables

Opport = In the next six months, will there be good opportunities for starting a business in the area where you live? (1 = Yes, 0 = No)

Skill = Do you have the knowledge, skill and experience required to start a new business? (1 = Yes, 0 = No)

Fear_fail = Would fear of failure prevent you from starting a business? (1 = Yes, 0 = No)

Independent Variables

Equal_inc = In your country, most people would prefer that everyone had a similar standard of living. (1 = Agree, 0 = Disagree)

Good_career = In your country, most people consider starting a new business a desirable career choice. (1= Agree, 0 = Disagree)

High_status = In your country, those successful at starting a new business have a high level of status and respect. (1 = Agree, 0 = Disagree)

Media_cov = In your country, you will often see stories in the public media about successful new businesses. (1 = Agree, 0 = Disagree)

HDI = Dummy variable explaining the impact of HDI tier ranking of the respondents country on perceptions. Created using a step-wise function "[HDI_2 value, HDI_3 value]"

HDI 1 (constant) = [0,0]; HDI 2 = [1,0]; HDI 3 = [1,1].

POL_SYST = Dummy variable explaining the impact of the country's political system on perceptions of entrepreneurship. Created using a step-wise function "[POL_SYST_2 value, POL_SYST_3 value, POL_SYST_4 value]"

Political system 1 (constant) = [0,0,0]; Political system 2 = [1,0,0]; Political system 3 = [1,1,0]; Political system 4 = [1,1,1].

ECON_DEV = Dummy variable explaining the impact of the country's economic development on the perceptions of entrepreneurship. Creating using a binary input.

Econ developed 1: ECON_DEV = 0

Econ developed 2 (less developed): ECON_DEV = 1

Gender = Dummy variable for specifying gender (1 = Male, 0 = Female)

Age = Variable representing age of entrepreneur

Uneduc = What is the highest level of education you have completed? (0 = pre-primary education, 1 = Primary education or first stage of basic education = 1, Lower secondary or second stage of basic education = 2, Secondary education = 3, Post-secondary non-tertiary education = 4, First stage of tertiary education = 5, Second stage of tertiary education = 6)

Hh_size = Variable representing number of members in respondent's household

Occu = Which of the following best describes your main employment status? (I am currently employed in full-time work = 1, I am currently employed in part-time work = 2, I am currently self-employed = 3, I am currently seeking employment = 4, I am currently not working because I am retired or disabled = 5, I am a student = 6, I am a full-time home-maker = 7

Ownmge = Are you, alone or with others, currently the owner of a business you help manage, self-employed, or selling any goods or services to others? (1 = Agree, 0 = Disagree)

Appendix II: Variables in Graphical Analysis of NES Dataset

Variables of Interest

Market_entry = Variable indicating whether the expert thinks it is hard for a new venture to proceed with market entry.

Opport_exist = Variable indicating whether the expert thinks there exists opportunities for entrepreneurs in the country.

Risk_taking = Variable indicating whether the expert thinks the country promotes risk-taking activities like pursuing a career in entrepreneurship.

Appendix III: Descriptive Statistics for 2010 GEM APS Dataset

Descriptive Statistics for Independent Variables

	N	Mean	Std. Deviation	Std. Error Mean
gender	24260	1.51	0.5	0.003
age	23806	42.99	15.54	0.101
hh_size	24236	3.38	1.742	0.011
equal_inc	23236	0.52	0.499	0.003
good_career	22789	0.61	0.489	0.003
high_status	22986	0.74	0.441	0.003
media_cov	23083	0.64	0.481	0.003
uneduc	24261	3.82	1.884	0.012
occu	24261	5.27	13.993	0.090
ownmge	24261	0.20	0.624	0.004

Appendix III.A: T-Tests for Explanatory Variables

T-Tests for Explanatory Variables

	Test Value (Mean)	t	df	Sig. (2-tailed)	Mean Difference	CI of the Difference* Lower	Upper
gender	1.51	1.174	24259	0.240	0.004	0.00	0.01
age	42.99	0.041	23805	0.967	0.004	-0.19	0.20
hh_size	3.38	0.066	24235	0.948	0.001	-0.02	0.02
equal_inc	0.52	1.225	23235	0.220	0.004	0.00	0.01
good_career	0.61	-1.116	22788	0.265	-0.004	-0.01	0.00
high_status	0.74	-1.297	22985	0.195	-0.004	-0.01	0.00
media_cov	0.64	-0.973	23082	0.330	-0.003	-0.01	0.00
uneduc	3.82	-0.188	24260	0.851	-0.002	-0.03	0.02
occu	5.27	-0.007	24260	0.995	-0.001	-0.18	0.18
ownmge	0.20	0.852	24260	0.392	0.003	0.00	0.01

*Confidence Interval at 5% level

Appendix III.B: Chi-Squared Tests of APS Dataset

Figure 1: Chi-Square Test Statistics for *Opport*

	gender	age	hh_size	uneduc
Chi-Square	1.757a	11993.060b	66739.982c	11332.613d
df	1	81	21	7
Asymp. Sig.	0.185	0	0	0

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 11956.5.
b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 286.3.
c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 1085.7.
d. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 2989.3.

Figure 2: Chi-Square Test Statistics for *Skill*

	gender	age	hh_size	uneduc
Chi-Square	53.980a	13076.119b	74914.707c	12259.205d
df	1	81	21	7
Asymp. Sig.	0	0	0	0

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 13360.5.
b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 320.0.
c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 1213.5.
d. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3340.3.

Figure 3: Chi-Square Test Statistics for *Fear_Fail*

	gender	age	hh_size	uneduc	
Chi-Square	18.393a	12203.505b	68679.624c	10997.830d	
df	1	81	21		7
Asymp. Sig.	0	0	0		0

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 12130.0.
b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 290.3.
c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 1101.6.
d. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3032.6.

Appendix IV: Descriptive Statistics for 2010 GEM NES Dataset

Descriptive Statistics for 2010 GEM NES Dataset

	N	Mean	Std. Deviation	Std. Error Mean
mkt_entry	858	2.65	0.975	0.033
opport_exist	872	3.67	0.996	0.034
risk_taking	875	3.13	1.124	0.038

T-Tests for Explanatory Variables							
						CI of the Difference*	
	Test Value (Mean)	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
opport_exist	3.67	108.971	871	0	3.674	3.61	3.74
mkt_entry	2.65	79.653	857	0	2.652	2.59	2.72
risk_taking	3.13	82.339	874	0	3.128	3.05	3.2
*Confidence Interval at 5% level							

Appendix V: 2010 Human Development Index Rankings

Country HDI Tiers	Normalized Rank	2010 HDI Rank	Country
1	1	4	United States
	2	11	Japan
	3	13	Switzerland
2	4	15	Israel
	5	26	United Kingdom
	6	63	Peru
3	7	65	Russian Federation
	8	70	Islamic Republic of Iran
	9	89	China

Appendix VI: Groups of Countries Based on Political System

Country Political System Groups	Country	Political System
1	Israel	Absolute Monarchy
	Japan	Constitutional Monarchy
	United Kingdom	Constitutional Monarchy
2	United States	Democracy
	Switzerland	Democracy
	Peru	Democracy
	Russian Federation	Democracy
3	China	Socialism
4	Iran	Theocracy

Appendix VII: Groups of Countries Based on Economic Development

Country Political System Groups	Country	Economic Development
1	United States	Privatized
	Japan	Privatized
	Switzerland	Privatized
	Israel	Privatized
	United Kingdom	Privatized
	Peru	Privatized
2	Russia	Transitional
	Iran	Transitional
	China	Transitional

Appendix VIII: Matrix 1 Duplicate

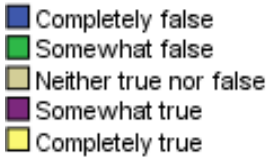
	Constant	gender	age	hh_size	equal_Inc	good_career	high_status	media_cov
Constant	1.000							
gender	-0.433	1.000						
age	-0.542	0.015	1.000					
hh_size	-0.246	-0.023	0.162	1.000				
equal_Inc	-0.145	-0.044	0.004	0.003	1.000			
good_career	-0.099	0.017	0.035	0.003	-0.072	1.000		
high_status	-0.206	0.012	0.003	0.012	-0.010	-0.189	1.000	
media_cov	-0.061	-0.007	-0.040	-0.016	-0.062	-0.112	-0.141	1.000
uneduc	-0.492	0.043	0.062	0.032	0.142	0.038	-0.006	-0.059
occu	-0.027	0.019	-0.014	-0.003	0.057	-0.011	-0.038	0.014
ownmge	-0.042	0.083	-0.020	-0.019	0.026	-0.002	-0.015	0.019
HDI_2	-0.452	0.011	0.145	-0.220	-0.093	-0.053	0.002	-0.027
HDI_3	0.119	0.010	0.029	0.143	0.051	0.012	0.025	0.051
pol_syst_2	-0.387	-0.005	0.033	-0.172	-0.017	-0.123	0.008	-0.069
pol_syst_3	-0.034	-0.020	0.001	-0.029	0.040	0.026	-0.025	-0.103
pol_syst_4	-0.010	0.065	0.068	-0.152	0.072	0.023	-0.040	0.070

Note: ECON_DEV omitted because of restriction on degrees of freedom

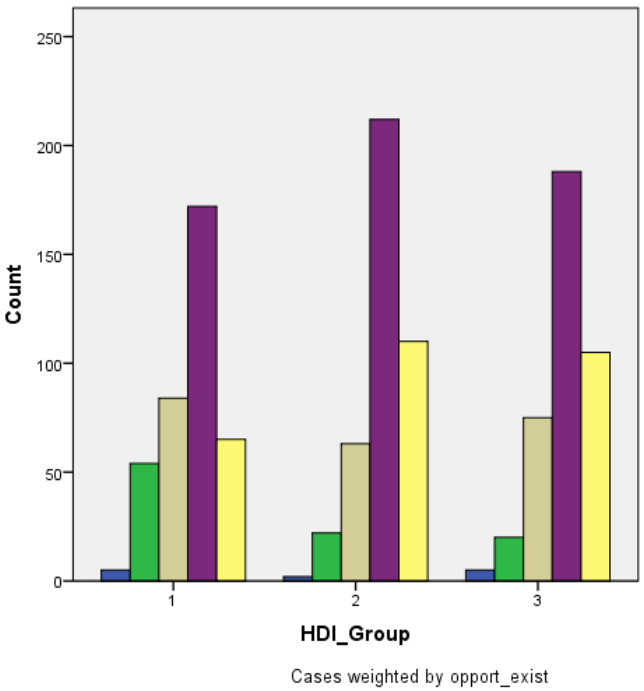
	uneduc	occu	ownmge	HDI_2	HDI_3	pol_syst_2	pol_syst_3	pol_syst_4
Constant								
gender								
age								
hh_size								
equal_Inc								
good_career								
high_status								
media_cov								
uneduc	1.000							
occu	0.015	1.000						
ownmge	0.005	0.123	1.000					
HDI_2	0.198	-0.030	-0.029	1.000				
HDI_3	-0.050	0.028	0.033	-0.450	1.000			
pol_syst_2	0.124	-0.041	-0.049	0.638	-0.441	1.000		
pol_syst_3	0.145	-0.003	-0.066	0.037	-0.746	0.032	1.000	
pol_syst_4	-0.073	-0.282	-0.078	0.030	-0.016	0.023	-0.288	1.000

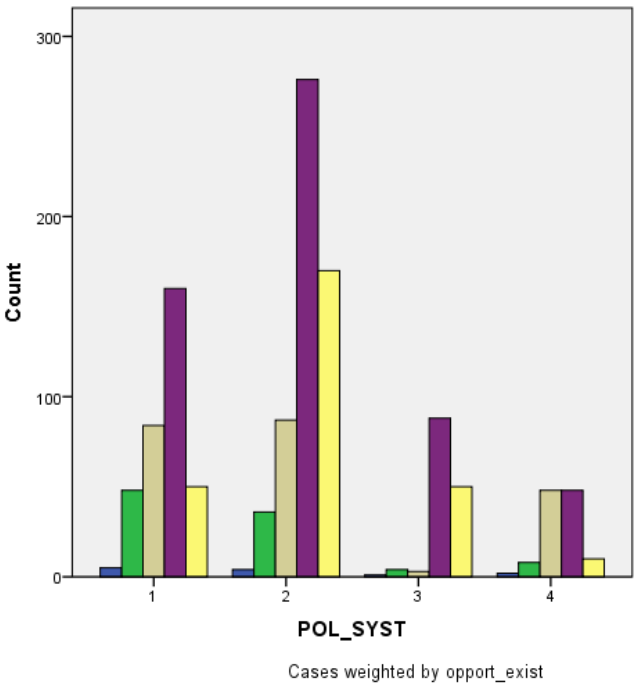
Note: ECON_DEV omitted because of restriction on degrees of freedom

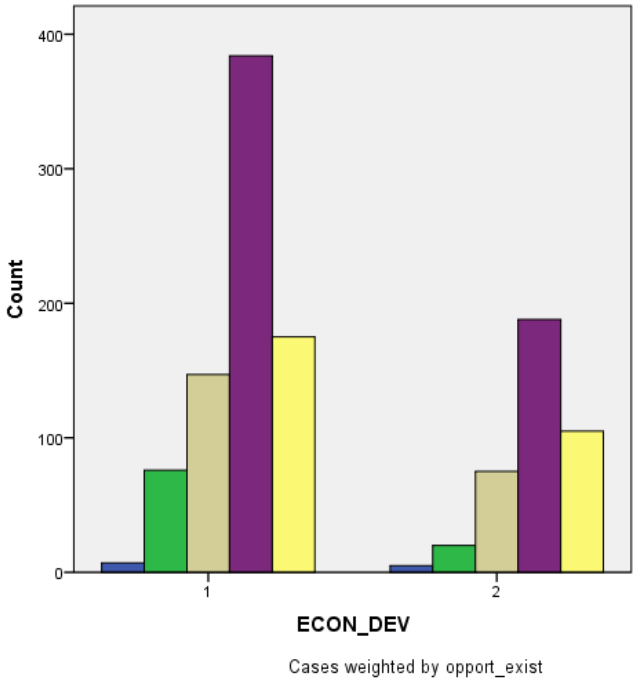
Appendix VIII: Histograms for Section IV.D.



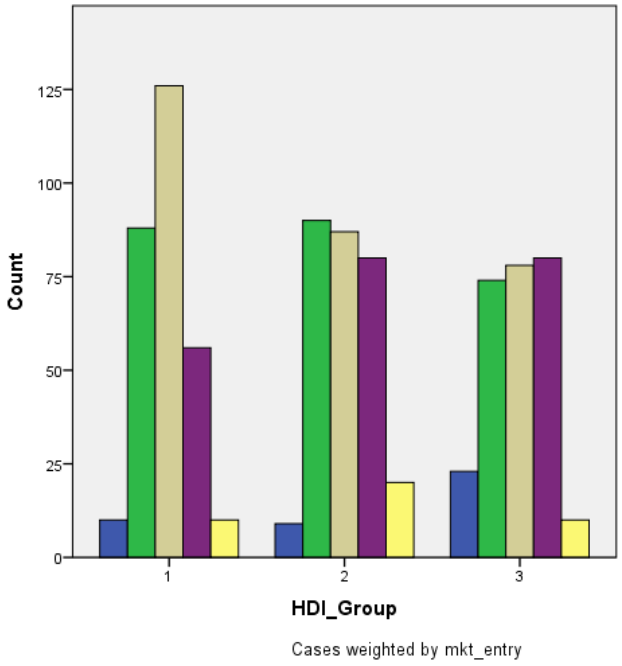
Histograms for *opport_exist* clustered by HDI, POL_SYST, and ECON_DEV

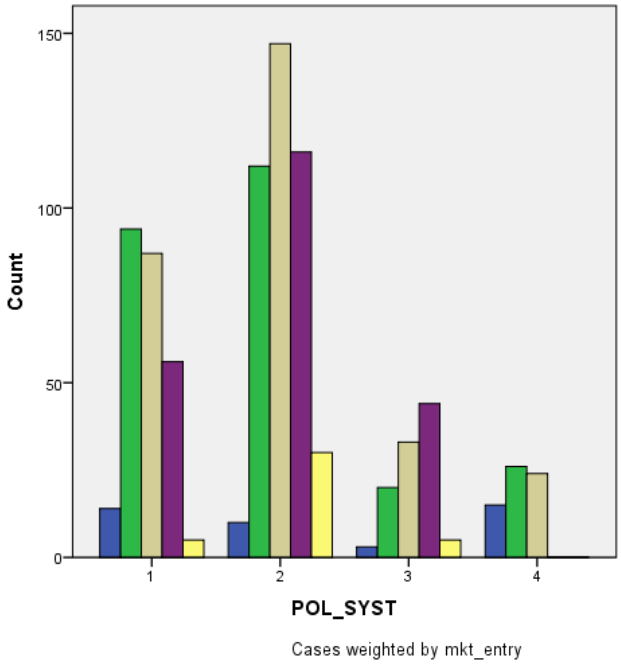


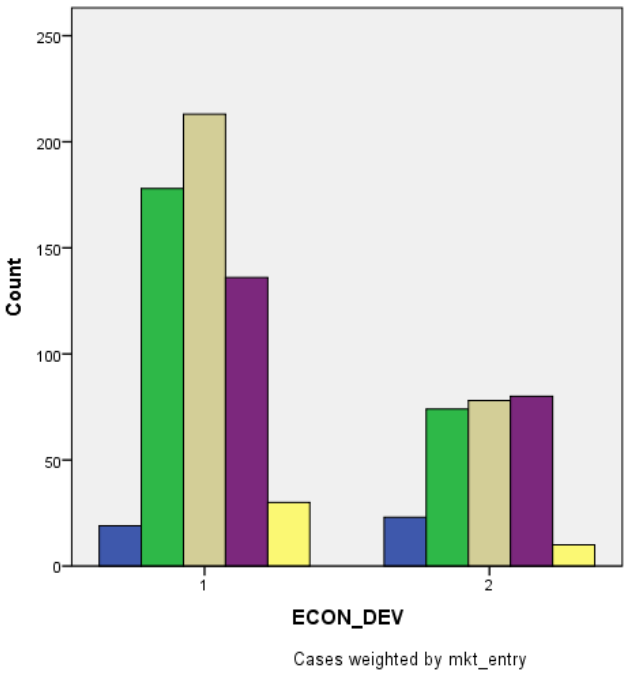




Histograms for *mkt_entry* clustered by HDI, POL_SYST, and ECON_DEV







Histograms for *risk_taking* clustered by HDI, POL_SYST, and ECON_DEV