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Experts vs. Public, Who Knows Better? Factors Affecting High Growth Entrepreneurship in Developed and Developing Countries

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Claremont McKenna College

Experts vs. Public, Who Knows Better?

**Factors Affecting High Growth Entrepreneurship in Developed and
Developing Countries**

Submitted to

Professor Oana Tocoian

and

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by

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for

Senior Thesis

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Abstract

This paper uses the Global Entrepreneurship Monitor data of approximately 200,000 surveys conducted on industry experts and general population to examine factors that have a significant impact on high growth Total Early-Stage Entrepreneurial Activity (TEA), with a focus on developed countries with GDP per capita of USD 20,000 or above. The results suggest that expert opinion has a significant positive correlation with high growth TEA in developed countries, while only the public sentiment has a meaningful relationship with high growth TEA in developing countries. Among the specific categories of the survey, access to funding and government regulations and support had the largest impact.

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I. Introduction and Problem Statement

The Problem: Youth Unemployment in Korea

In October 2015, a student in the graduating class of the most prestigious university in South Korea confessed the unthinkable: she had just passed the level-9 civic service exam and fully intended to accept the only job the exam was designed for: the lowest ranking government position with an annual salary of approximately USD 15,775¹ (Lee 2015). While every individual has varying career preferences, the fact that one of the smartest students in the country decided on a position that was originally intended for high school graduates came as a great shock to many people.

The above anecdote offers an interesting glimpse into the growing concerns regarding increasing youth unemployment in Korea. In 2012 among OECD countries, Korea had the third largest percentage of youths (15-29 year-olds) in the population who completed tertiary education but were neither employed nor in education or training (OECD 2015). More recently in April 2015, youth unemployment rate hit a record high of 10.2%, the highest the country has seen in the past 15 years, while overall unemployment rate stayed relatively stable around an average of 3.67% during the same period (Statistics Korea 2016).

The result is a desperate thirst for job security among youths in Korea. According to a recent study conducted on 1,524 college students and persons currently in search of a job, 83% were seriously considering level-9 civic service exam and 41.9% were currently

¹ Exchange rate: KRW 1,141 per 1 USD. Exchange rate dated October 31, 2015.

studying for the exam. The biggest reasons for preparing for the test were job security² (77%) and the stagnating labor market (38.5%) (Jung 2016). Only 16.1% of those studying for the test did so due to a lack of interest in other fields, which suggests a strong tendency among youths to prioritize stability over the pursuit of personal passion or interests.

In contrast to skyrocketing interest in government careers, the demand for labor from the public sector is noticeably declining. In 2016 the acceptance quota for level-9 and level-7 civic service exams³ for Seoul showed a year-on-year decrease of 26.1%, dropping in absolute number of job offers from 2,284 to 1,689 (Kim 2016). On the other hand, the number of exam takers during the same period increased by 13.7% in 2016, 62.7% of which were youths in their 20s and 31% in their 30s. This figure is for the civic service exam in Seoul alone; the national total amounted to a staggering 222,650, the largest pool since the exams were established in 1949 (Kang 2016). Overall the average age of test-takers was 28.5, similar to 28.6 in the previous year (Kang 2016).

The private sector labor market is not faring much better. According to JobKorea's 2016 Undergraduate Recruiting Survey⁴ conducted on 240 of the top 500 firms⁵ in Korea, only 86 firms planned to recruit undergraduates in 2016. 112 firms, almost half of the respondents, had no intention to hire any students out of college (Chun

² Government officials boast one of the highest job securities in Korea, with most employees guaranteed work until 60 years of age.

³ Level-7 civic service exam is designed for slightly higher positions in the government than those offered in the level-9 civic service exam.

⁴ JobKorea is one of the largest and most renowned online job search platforms in Korea. This information was extracted from a news article based on the figures in the report published by JobKorea.

⁵ Top 500 in revenues

2016). Among the 86 firms that are preparing for undergraduate recruiting, the total number of planned job offers has declined by 4.8% compared to the previous year (Chun 2016).

Perhaps the most alarming of all is the fact that Korea boasts more educated and skilled youths than most other OECD member nations. In 2012, Korea's shares of youths with low numeracy skills and low problem-solving skills in technology-rich environments were both below 5%, the smallest among OECD countries (OECD 2015). Korea's share of youths with low literacy skills was second only to Japan (OECD 2015). According to the *2016 Korean Skills Mismatch and Labor Market: International Comparison Report* published by the Korea Research Institute for Vocational Education & Training, Korea was the only country among OECD members where employment rate and individual skills improvement did not show a positive correlation (Jung 2016). While most OECD nations showed higher average employment rate for high-skilled individuals (81.7%) than low-skilled individuals (54.8%), figures for both were similar in Korea at 66.8% and 65.2% respectively (Jung 2016).

All of the above figures and statistics point to a serious need for a new pipeline of jobs in Korea, especially for skilled individuals. With declining demand for labor in both the public and the private sector, a potential driver of jobs to revamp the labor market could be entrepreneurship. The next section explores various studies on the effects of entrepreneurship on job creation and its contribution to economic development.

II. Literature Review

A. Entrepreneurship as a Driver of Job Creation

A number of studies attest to entrepreneurship having significant contributions to job creation. A 12-year empirical research project on the economic value of entrepreneurship has shown that entrepreneurs create more jobs, prompt higher productivity growth, commercialize high quality innovations, and are happier with their career than their counterparts, defined as “firms that (i) employ more than 100 employees; (ii) are older than 7 years; (iii) incumbent firms.” (Praag and Versloot 2007). Another research paper concluded that the primary reason behind United States’ high employment rate that dwarfed most other developed nations between 1963 and 1988 was the formation of new businesses resulting in net increases of both firms and jobs (Kirchhoff and Phillips 1988). While the rise of entrepreneurship can also contribute to job losses due to replacing existing jobs or outperforming major competitors and forcing them out of business, the net effect on job creation was deemed positive (Kirchhoff and Phillips 1988). A report in 2005 by a senior economist at the Bureau of International Labor Affairs, U.S. Department of Labor claims that while larger firms have a larger impact on job creation in the manufacturing industry than startups, formation of new businesses (small establishments with 1 – 19 employees) contributes significantly to job creation in the service industry (Bedzarnik 2000).

In studying the impact of entrepreneurship on the economy, some interesting things to note include the varying effects of new businesses depending on the level of economic development of the country and the type of entrepreneurship. Sternberg and

Wennekers make an interesting point that the positive effect of entrepreneurship on economic growth is conditional on high economic development (Sternberg and Wennekers 2005). They argue that only developed countries experience positive contribution to economic growth from entrepreneurial activities, while developing nations experience negative impacts. The study finds a U-shaped relationship between economic development and entrepreneurship, which grows particularly stronger for opportunity-based nascent entrepreneurship (Sternberg and Wennekers 2005). Potential reasons for this relationship include a tendency to be forced into entrepreneurship when the country is poor and there are few employment opportunities. As the economy develops, and better alternative jobs emerge, rates of such *necessity*-driven entrepreneurship decline. Entrepreneurship peaks again in developed nations as people voluntarily leave employment in large firms to pursue other opportunities. While some studies demonstrate that on average entrepreneurship offers lower wages and fewer benefits than large corporations, there has been evidence that people engaged in entrepreneurial activities are happier and more satisfied despite the lower benefits (Praag and Versloot 2007).

The type of entrepreneurship also has an effect on the degree of contribution to job creation and economic growth. Research shows that of the four types of total early-stage entrepreneurial activity (TEA) including overall TEA⁶, necessity TEA⁷, opportunity TEA⁸, and high growth potential TEA⁹, only high growth potential TEA has a significant

⁶ Sum of all entrepreneurial activities, regardless of motives or growth potential.

⁷ Entrepreneurs are forced into opening a business due to lack of other options

⁸ Entrepreneurs consciously chose to open a business to pursue new opportunities

impact on economic development (Wong, Ho, and Autio 2005). Sternberg and Wennekers also agree that high-growth entrepreneurship driven by opportunity motives as opposed to necessity motives have a particularly larger impact on economic growth (Sternberg and Wennekers 2005).

This paper assumes that entrepreneurship has a positive impact on job creation and growth. Hence the major point of interest is what factors affect entrepreneurship. What can Korea or other countries suffering from similar decline in the labor market do to encourage entrepreneurial activities, ultimately providing a new pipeline of jobs for their youths? Taking into account that varying economic development stages can have a significant impact in job creation, the countries studied in this paper will often be classified into two categories: low-income and high-income countries using GDP per capita of USD 20,000 as the threshold.

B. Factors Affecting Entrepreneurship

The bulk of the analysis in this paper uses the National Expert Survey (NES) and the Adult Population Survey (APS) from the Global Entrepreneurship Monitor (GEM)¹⁰. I examine the degree to which expert opinion and the public opinion correlate to high growth TEA, and whose opinion the government should be mindful of in order to encourage entrepreneurship.

⁹ New businesses expecting 10 or more hires and growth in excess of 50% over the next 5 years. More detailed definition of high growth TEA for the purposes of this paper is explained in the Methodology section.

¹⁰ More information on the data can be found in Data Description section.

In addition to analyzing the impact of NES and APS, I dive further into each survey and break them down to key factors that play a critical role in fostering entrepreneurship. In identifying the factors, I rely on Krueger and Brazeal's simplified model of entrepreneurial potential based on Azjen's theory of planned behavior and Shapero's model of entrepreneurial event (see fig. 1).

Azjen's theory of planned behavior provides good insight into analyzing factors that affect one's intentions to take certain actions. According to Azjen, there are three principal attitudes that guide one's intentions: personal attitude toward the act, social norms regarding the act, and the individual's perception of the self's capabilities to carry out the act (Azjen 1985). This theory suggests that even if one has favorable opinions of a certain act, if the social norms are against it then the intention may not be formed, and vice versa. And even if both personal and social opinions are favorable, if he or she considers oneself to be incompetent, it becomes more of a challenge to form strong intentions.

Shapero's model of entrepreneurial event has a narrower focus of identifying what causes someone to be engaged in entrepreneurial activities. Of the three key factors Shapero suggests, two are similar to Azjen's theory of planned behavior: whether entrepreneurship is desirable and whether it is feasible (Krueger and Brazeal 1994). The desirability of entrepreneurship aligns with Azjen's social norm factor, indicating that societal perception of entrepreneurship could potentially have a significant impact on TEA (Krueger and Brazeal 1994). Feasibility of entrepreneurship is more multi-faceted, which covers both personal capabilities and external factors such as infrastructure,

availability of funding, government support, and regulations (Krueger and Brazeal 1994). While Shapero has argued that the propensity to act, the last of the three factors to motivate entrepreneurial intentions, is a personality trait unique to certain individuals, Krueger and Brazeal point out that there has been research suggesting that it is possible to teach individuals to develop this characteristic (Krueger and Brazeal 1994).

For the purposes of this paper, both Azjen and Shapero's theories were embraced to create a short list of influential factors. The list is as follows:

1. Feasibility

- a. Funding. Is there ample and accessible capital to fund the new business?
- b. Government regulations and support.
- c. Non-government support infrastructure.
- d. Opportunities for women.

2. Desirability

- a. Social perceptions. Is entrepreneurship considered a desirable and respectable career path?

3. Personal Competence

- a. Skills. Does the individual have the necessary skill sets to confidently act on new business ideas?
- b. Education. Is there quality education available to foster entrepreneurship and necessary skills?

The data analyzed in this paper was grouped into the different factors listed above, in an attempt to parcel out the impact of each on entrepreneurial activities. Detailed discussion on data grouping can be found in the Methodology Section.

III. Data Description

To study entrepreneurship across a broad range of countries and time series, I rely heavily on the Global Entrepreneurship Monitor (GEM). Started in 1999 by Babson College and London Business School, GEM conducts approximately 200,000 interviews every year with both experts¹¹ and individuals on their thoughts and opinions on entrepreneurship in their respective home countries. To date, GEM has 17 years of data from up to 10,000 individuals in each of more than 100 countries.

GEM's interviews are mainly of two types: the National Expert Survey (NES) and the Adult Population Survey (APS). NES is designed for experts to evaluate the status quo of entrepreneurship-related factors in their resident country. Most of the survey consists of questions asking for responses on a scale of 1 to 5, with 1 being 'completely disagree' and 5 being 'completely agree.' For the most part, 'completely agree' (5) indicates more favorable conditions for entrepreneurs. The APS is for gauging the general population's take on entrepreneurship conditions. Questions are usually in binary yes and no form, asking interviewees to answer from their personal experience or perception. Generally a 'yes' indicates positive opinion of the current situation for engaging in entrepreneurial activities. Each survey is organized separately and is

¹¹ Available experts vary per studied year, but mostly they consist of: entrepreneurs, investor/financer/banker, policy maker, business and support services provider, and educator/teacher/entrepreneurship researcher.

published in two forms, a summary on the national level and the actual individual responses to every interview conducted.

The data used in this paper come from years 2007 and 2012 (the most recent data published on APS and NES). For a full list of countries whose data was used in this paper, please refer to the appendix. All figures and tables refer to the most recent data from GEM 2012 unless otherwise noted.

Other datasets used in this paper include: The World Bank Open Data on GDP per Capita, the World Bank Group's Doing Business Data¹², and the Corruption Perceptions Index (CPI)¹³ by Transparency International.

IV. Methodology

To best determine what factors affect entrepreneurship, I first had to choose the dependent variable. In other words, how do I measure 'entrepreneurship?' Because the initial problem statement that piqued my interest was the declining labor market in Korea, I chose high growth TEA (total early-stage entrepreneurial activity) as a % of the total population within ages 18-64. High growth TEA for the GEM 2012 data is defined as TEA of which the owner expects to hire 10 more people and grow the company by more

¹² Doing Business Data evaluates the ease with which individuals can start and operate a business in each country. Countries are scored in several criteria and ultimately determined a ranking, with the lowest number being the best. Some metrics used to determine the ranking include starting a business, getting credit, and enforcing contracts. The data used in this paper is for year 2015 but typically the variation in the rankings is negligible within the span of 2-3 years. The full dataset can be accessed at <http://www.doingbusiness.org/>

¹³ The Corruption Perceptions Index measures the corruption magnitude of each country's public sector. Higher score indicates better transparency. The data is from year 2012. The full dataset can be accessed at

than 50% in the next 5 years¹⁴. This particular statistic was unavailable in earlier years, so I use high job growth TEA (expecting to hire 19 or more people in the next 5 years) and TEAopp (TEA driven by opportunity motives as opposed to necessity-driven motives) for GEM 2007 data. The correlation matrix indicates extremely high collinearity between high growth TEA ('TEAjob' in the matrix) and high job growth TEA ('TEA12HJG' in the matrix) (see table 1). Correlation between high growth TEA and opportunity-driven TEA ('TEA12opp' in the matrix) is lower but still at a reasonably high rate of 60.73%. Scatter plots also suggest considerable correlation across all three data (see fig. 2).

Next step was calculating the average NES and APS scores. The average NES score is an average of all the responses on a scale of 1 – 5, with 5 representing a more favorable situation for entrepreneurship. For some questions in which '5' would represent a difficult situation ("In my country, the markets for consumer goods and services change dramatically from year to year"), the score was reversed to match other responses. Average APS score was calculated as an average of the percentage of positive answers ('yes') across all statements. For few questions in which 'yes' represents a negative outlook, for instance "fear of failure would prevent starting a business," the answer was reversed to align with the rest of the responses. Average APS score is an average of the % of positive answers ('yes') across all statements.

In addition, the questions in APS and NES were grouped based on the context of the question to represent each influential factor (see table 2 for category grouping and appendix C for a comprehensive list of all questions). For instance, APS binary statement

¹⁴ The original data (TEA12job) was represented as a % within TEA. I multiplied this figure by the total TEA (TEA12) to obtain % within total population.

“YES: Good conditions to start business next 6 months in area I live” would be categorized under feasibility, while statements such as “YES: Has required knowledge/skills to start business” will fall under personal competence. Average scores per category were calculated for comparison and also to determine individual effects in the regression.

Lastly, I divide the countries into two cohorts: those with GDP per capita of USD 20,000 or higher in 2012 (‘developed countries’) and those with lower GDP (‘developing countries’). The distribution of GDP per capita in 2012 suggests USD 20,000 as a reasonable cutoff (see fig. 3). Three countries (Ethiopia, Malawi, and Uganda) were dropped from the dataset due to their extremely low GDP per capita of under USD 1,000, which makes them difficult to compare even with other poor countries.

The regression model used to estimate the effects of four variables is as follows:

$$\begin{aligned}
 (1) \text{ High Growth TEA}_i & \\
 &= \beta_0 + \beta_1 \text{NES score}_i + \beta_2 \text{APS score}_i \\
 &+ \beta_3 \text{Ease of doing business rank}_i + \beta_4 \text{CPI}_i + \epsilon_i
 \end{aligned}$$

Where all variables are recorded at the country level (i), for the year 2012 with the exception of Ease of Doing Business rank¹⁵.

Additional analyses were conducted to determine which categories within NES and APS had the largest impact on high growth TEA. To avoid issues from multicollinearity, several variables were excluded from some regressions. The regression

¹⁵ The Ease of Doing Business rank is from year 2015. However, the variation within the span of 2-3 years in the rank is typically negligible.

model used is as follows, where all variables are at the country level (i), for the year 2012:

$$\begin{aligned}
 (2) \text{ High Growth TEA}_i & \\
 &= \beta_0 + \beta_1 \text{NES funding}_i + \beta_2 \text{NES skills}_i \\
 &+ \beta_3 \text{NES opportunity for women}_i \\
 &+ \beta_4 \text{NES government regulations}_i + \epsilon_i
 \end{aligned}$$

Select variables from GEM 2012 APS Global National Level Data were also used in regression analyses to find their effects on high growth TEA. The regression models are below where all variables are at the country level (i) for the year 2012¹⁶:

$$\begin{aligned}
 (3) \text{ High Growth TEA}_i & \\
 &= \beta_0 + \beta_1 \text{TEA12HIX}_i + \beta_2 \text{TEA12tec}_i \\
 &+ \beta_3 \text{Tea12nt1}_i + \beta_4 \text{Tea12nt2}_i + \epsilon_i
 \end{aligned}$$

$$\begin{aligned}
 (4) \text{ High Growth TEA}_i & \\
 &= \beta_0 + \beta_1 \text{TEA12opp}_i + \beta_2 \text{TEA12nec}_i \\
 &+ \beta_3 \text{TEA12MT1}_i + \beta_4 \text{TEA12MT2}_i + \epsilon_i
 \end{aligned}$$

¹⁶ Variable names are as specified on the GEM 2012 APS Global National Level Data. See the Appendix or Other Factors Affecting High Growth TEA in Developed Countries for detailed explanation of the variables and regression analyses results.

V. Results and Discussion

A. Summary Statistics of GEM 2012 Data

Table 3 contains summary statistics of all the variables used in the regression models. In 2012, developing countries were recorded to have more high growth TEA than developed countries (see table 3). While this result may seem counterintuitive at first, one potential explanation is the lack of alternatives in developing countries. When there are fewer desirable jobs in the market, more people are forced to turn to starting their own businesses. This in turn can increase overall TEA and subsequently impact high growth TEA. Another factor to consider is the quality of the businesses. Wage comparison study of the high growth potential startups will help reveal more information about the different contributions of high growth TEA in each cohort regarding the jobs that are created. Lastly, it should be noted that high growth TEA is determined by individual judgments and expectations. Current entrepreneurs were asked whether they expected their businesses to experience significant growth in the next 5 years, and positive responses were recorded as high growth TEA. This is an inherently subjective method that can easily be influenced by biases.

The distribution of high growth TEA was skewed by outliers in both cohorts, but overall standard deviation was significantly higher among developing countries (see fig. 4). The United States of America and Singapore are exceptional in their high growth TEA among developed countries and pose as interesting subjects for future studies.

Average NES score is higher in developed countries, with most data points clustered around the 3.0 – 3.5 range while developing countries tend to stay below 3.0

(see fig. 5). The correlation between expert opinions and high growth TEA also seems to be higher in developed countries, with a visible trend of a positive slope. More analysis on the correlation will be discussed in later sections.

A breakdown of the scores in specific categories shows small variation, suggesting that there are no outliers that are performing exceptionally well or exceptionally badly for either cohort. The biggest score gaps between developing and developed countries exist in government regulations and support and non-government infrastructure (see fig. 6).

Minimal discrepancy was found in social perception, indicating that entrepreneurship is equally favored as a desirable career choice regardless of country development level. Education scores display similar results, hinting that educational programs designed to enhance entrepreneurial abilities are similarly average at a score of 2.5 out of 5. However, more experts agreed that individuals are equipped with appropriate skills in developed countries than in developing nations. This is an interesting difference when the quality of education is perceived to be similar. It can be inferred that factors outside of education play a key role in developing entrepreneurial skill sets, or that experts in developed countries simply have a more positive outlook on individual competency. Access to funding and opportunities for women to engage in entrepreneurial activities both scored higher in developed countries.

Another interesting observation is the similar distribution of category scores in developed and developing countries. Opportunities for women and social perception of entrepreneurship scored the highest for both cohorts, while individual competency to be

an entrepreneur and access to funding scored the lowest. This could indicate that the lowest scoring categories are considered of highest importance in entrepreneurship, prompting the experts to apply harsher standards when scoring them. Another possible explanation is that regardless of economic development level, certain areas are more difficult to improve than others.

The distribution of NES scores show a tendency to be clustered around certain ranges (2.7 – 2.9 and 3.0 – 3.2) for developed countries while the variation in developing countries resembles a more normal distribution (see fig. 7).

The average APS score was noticeably higher in developing countries (see fig. 8). While the maximum APS score is 0.51 for developed countries, developing countries show a wide spread from 0.3 to 0.7 with roughly half of the countries scoring 0.5 or higher (see fig. 9). This is an interesting contrast compared to average NES scores, at which developed countries fared better than developing countries. The reversed results suggest that residents of developing countries may be more optimistic about entrepreneurship conditions than those in developed nations. Another possible explanation is that the relative abundance of alternative career options in developed countries encourages stricter standards when evaluating conditions to start a new business.

Detailed breakdown of APS scores reveal that the largest gaps between developed countries and developing countries exist in regards to favorable conditions to start a business and personal competency (see fig. 10). The percentage of population who agreed with these two statements was significantly higher in developed countries.

The breakdown also shows that regardless of country development level, the distribution of scores is similar across all four categories. In both cohorts, most people agreed that there was a positive social perception of entrepreneurship as a career option and that fear of failure does not hinder them in starting a new business. The public was most pessimistic on current conditions to start a new business, with only 25% and 40% showing positive responses in developed countries and developing countries, respectively.

In developed countries, public opinion and expert opinion show strong signs of positive correlation (see fig. 11). An interesting observation is the noticeable trend of higher expert scores than the opinion of the general population. This result may indicate that residents of developed countries are more pessimistic regarding entrepreneurship conditions or they tend to apply stricter standards due to an abundance of alternative job opportunities around them. On the other hand, there appears to be no meaningful correlation between APS scores and NES scores in developing countries (see fig. 12). It is also noteworthy that there is very small variation in NES scores, suggesting that experts in developing countries may be less discerning than those in developed countries (see fig. 12).

B. Evaluating Predictors of High Growth TEA

This section attempts to analyze the correlation between NES scores, APS scores, Ease of Doing Business Index, and government Corruption Perceptions Index (CPI). I start by examining scatter plots for the different scores against developed and developing countries. The scatter plot between NES scores and high growth TEA shows a

significantly stronger positive correlation in developed countries than in developing countries (see fig. 13). Average APS scores show weak correlation in both cohorts (see fig. 14). Ease of Doing Business Ranking demonstrates a negative correlation with high growth TEA in developed countries while a meaningful relationship is difficult to find among developing nations (see fig. 15). CPI seems to be the only variable displaying significant levels of positive correlation in both country groups (see fig. 16).

Before conducting a regression analysis, correlation between the four variables was checked (see table 4). There is high correlation for comparisons involving ease of doing business and CPI, suggesting the results of the regression with all four variables may suffer from multicollinearity issues (see table 5).

Regression analysis results support most observations from earlier scatter plots. In developed countries, all four variables have a significant effect on high growth TEA (see table 5). Taking into account the scatter plots of APS and NES scores against high growth TEA (see fig. 14 and fig. 15), and potential biases from high multicollinearity, it is likely that expert opinion has the largest impact on high growth TEA for developed countries despite all four variables proving to be significant. The large negative coefficient for APS scores is counter-intuitive, but it goes to zero if we exclude NES from the regression – as suggested by the scatter plot (see fig. 14).

In contrast, APS scores prove to be the better predictive measure for high growth TEA than NES, ease of doing business, and CPI. This implies that the experts in developing countries may have differing standards of scoring, resulting in an inconsistent average with no correlation to actual entrepreneurial activities. On the other hand, the

people may have a better grasp of the situation simply because they personally experience operating a business in everyday lives. In developing countries, 14.81% of the entire population in ages 18-64 were setting up or currently owned a new business, while the figure dwindled to 6.89% in developed countries (GEM 2012).

Another counter-intuitive result is the negative coefficient of CPI. Higher CPI indicates less corruption and better transparency, which can be expected to have a positive impact on high growth TEA. But the regression results report otherwise, at least for the developed countries. As discussed previously, this result is likely due to high collinearity between other variables and CPI. The scatter plot with CPI in developing and developed countries offers more insight regarding the correlation between high growth TEA and corruption magnitude of the public sector (see fig. 4).

C. Time Series Analysis

GEM data from 2007 was used to calculate the difference in high growth TEA, average APS scores, and average NES scores to conduct a time series analysis. Because the 2007 data only contained information on 27 countries, the sample was not divided based on GDP per capita like in previous sections; the results in this section used all 27 countries in a single sample.

Expert opinion does not seem to serve as a meaningful predictive tool for the difference in high growth TEA (see fig. 17). Even excluding China, which appears to be an outlier, the scatter plot does not reveal meaningful correlation (see fig. 18). On the other hand, the scatter plot for average APS scores indicates a positive correlation with high growth TEA with the exception of a few outliers (see fig. 19).

The time series analysis suggests that changes in public opinion on entrepreneurship conditions is a significant indicator in both developed and developing countries. This is contrary to the results from 2012 in which public opinion did not show significant impact on high growth TEA. One possibility is that the correlation at any given point in time (2012) is obfuscated by differences in culture-specific attitudes, whereas when we look at changes over time these idiosyncratic but time invariant factors are differenced out, allowing us a glimpse of the true relationship between public perception and entrepreneurial realities. That said, taking into account that the time difference was a relatively short period of 5 years and during which many developed countries experienced considerable hits on their economy and the data in 2007 providing only 29 samples, it is advisable that the results from this section be taken with a grain of salt.

D. Effect of Specific Factors on High Growth TEA

Next I look at the specific categories within NES scores and APS scores respectively to determine the magnitude of each factor on high growth TEA (see appendix C. for a comprehensive list of survey questions per category). The correlation between the factors is checked to avoid multicollinearity problems (see table 6 and table 7). For NES scores, high correlation is found among many variables, with the exception between funding, individual skills, and opportunity for women (correlation below 0.35). Correlation is also low between government regulations and support and individual skills. Within APS scores, correlation is significantly high between all variables. Due to high multicollinearity, regression analysis was only conducted with the low correlation variables within NES scores.

Regression results reveal that the most significant factor associated with high growth TEA is the availability of funding, but it is only significant in developed countries (see table 8). Expert scores on individual competency and opportunities for women did not show significant correlation. Government regulations and support showed weak correlation in developed countries but no meaningful relationship in developing countries (see table 8).

E. Other Factors Affecting High Growth TEA in Developed Countries

Since Korea falls under the developed countries category, and because I believe high growth TEA more accurately reflects high growth entrepreneurship in developed countries¹⁷, additional regression analyses were conducted to examine factors that affected countries with GDP per capita above USD 20,000. Data used in this section is heavily dependent on GEM 2012 APS Global National Level Data.

Among age, occupation, and education level of current entrepreneur population, only occupation showed a significant correlation with high growth TEA. Higher percentage of entrepreneurs starting their own business while continuing their day job translated to almost 0.2% increase in high growth TEA percentage in the entire population.

¹⁷ Developed countries are similar in their institutional quality, legal systems, and alternate career options, which translates to more controlled variables and ultimately more accurate assessment of high growth TEA. I also believe the experts and general population education level in developed countries to be less varied than that in developing countries, which can be helpful in decreasing biases in individual survey responses.

Somewhat surprisingly, the use of latest technology and involvement in the technology sector showed no correlation with high growth TEA (see table 9). However, companies with over half of their customers overseas displayed significant positive correlation with high growth TEA. Whether or not the product was completely new or old to the customer also showed no significant relationship.

As can be expected, there is a significant positive correlation between the number of opportunity-driven entrepreneurs and high growth TEA (see table 10). Within the opportunity motive, entrepreneurs with a goal to increase income showed weak correlation with high growth TEA. Entrepreneurs with a goal to attain independence did not show meaningful correlation.

VI. Conclusion

The purpose of this paper was to examine the factors that affect high growth TEA, especially in developed countries. From GEM 2012 data, it was established that expert opinions have a significant correlation with high growth TEA while the general public sentiment did not have meaningful implications. Interestingly, the results were reversed in developing countries: the public opinion showed significant correlation while expert opinion failed to establish a correlation. This result suggests that governments in developed countries should heed to expert suggestions and strive to enhance their evaluation of current conditions. Investing resources to better the public sentiment on conditions to start a business may not be as important as making sure that the expert ratings is high.

Within NES, the survey questions were grouped into different categories that were likely to affect entrepreneurship (see table 2 for a comprehensive list of categories). Scores were averaged out per category then regressed against high growth TEA to reveal that the most significant factors to have a positive impact were access to funding and government regulations and support. This suggests that to encourage high growth TEA in developed countries, it is advisable to focus resources on providing more funding for potential entrepreneurs. Expanding startup incubator programs, encouraging angel investment in startups, and increasing government subsidies for entrepreneurs are some methods to improve available funding. Establishing favorable government regulations and entrepreneur support programs is also advisable. However, investing resources on

education to foster entrepreneurial skills does not seem to have as much of a significant impact on high growth TEA.

Entrepreneurs that started their business while maintaining a separate job were found to have a positive correlation with high growth TEA. This can be a challenge for Korea as most companies do not welcome their employees engaged in work other than their responsibilities in the firm. In addition, Korea consistently ranked in the top 5 longest work hours per day among OECD countries from 2007 to 2014 (OECD Statistics 2016). The combination of long hours and taboo of secondary jobs can greatly hinder the ability of employed Koreans to start their own business.

Young businesses with a large customer base overseas (in excess of 50%) showed positive correlation with high growth TEA. Novelty of product (whether or not the product or service is completely new or already present in the market) showed no significant correlation. Firms involved in the technology industry also failed to establish any meaningful correlation with high growth TEA. In addition, use of latest technology did not display any meaningful correlation, suggesting that despite the recent popularity of technology startups these firms do not necessarily have an advantage in expecting high growth.

Significant positive correlation was also found between the number of entrepreneurs engaged in opportunity-driven TEA and necessity-driven TEA. While the significance was stronger for opportunity-driven TEA entrepreneurs, the coefficient was more than double for necessity-driven entrepreneurs. This implies that overall increase in TEA has a positive impact on high growth TEA, regardless of whether the individual was

forced into it or not. Within those driven by opportunity, entrepreneurs focusing on increasing income displayed significant positive correlation with high growth TEA.

It is also interesting to note the differences between average NES and APS scores in developed and developing countries. While NES scores were higher than APS scores in developed countries, the reverse was true in developing countries: average APS scores in developing countries was 27.9% higher than those in developed countries. This suggests that individuals in developed countries are underestimating the actual conditions to start a new business; their views are more pessimistic than reality.

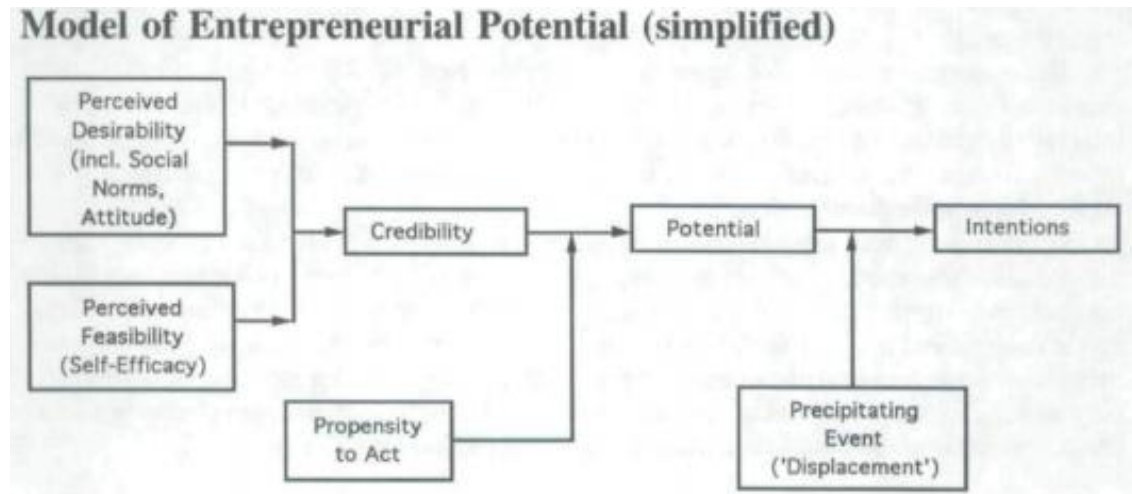
With various studies suggesting that entrepreneurship has a net positive impact on job creation, encouraging high growth entrepreneurship is a highly recommended option for the Korean government. To increase high growth TEA, it is advisable that the government provides more opportunities for entrepreneurs to access sufficient funding. Tax benefits to angel investors and favorable regulations to start new businesses will be helpful to entrepreneurs. Government support for firms that are willing to venture overseas is also encouraged, as firms with a large foreign customer base is more likely to experience fast growth and create more jobs. Frequent expert evaluation of current conditions will be helpful in gauging the effect of new programs designed to stimulate high growth TEA. Even if certain programs or regulations invoke negative public sentiment, they may be worthwhile if experts declare them to have a positive impact on conditions to start a new business. However, I believe the government has an obligation to listen to the people. Although the results in this paper suggest prioritizing expert

opinion before the general public sentiment, the government should be careful in not completely ignoring the latter.

Lastly, a change in office culture is highly encouraged to enhance entrepreneurship. This may be the most difficult challenge for Korea, as culture requires more time and effort than simply passing a new regulation in the National Assembly. An office culture that respects individual employee's passions and interests outside of the workplace is critical in encouraging potential entrepreneurs to start their venture while continuing to work their salary job. The government is encouraged to take the lead in bringing about this change, but ultimately it is on the people when it comes to cultivating a new culture.

VII. Figures

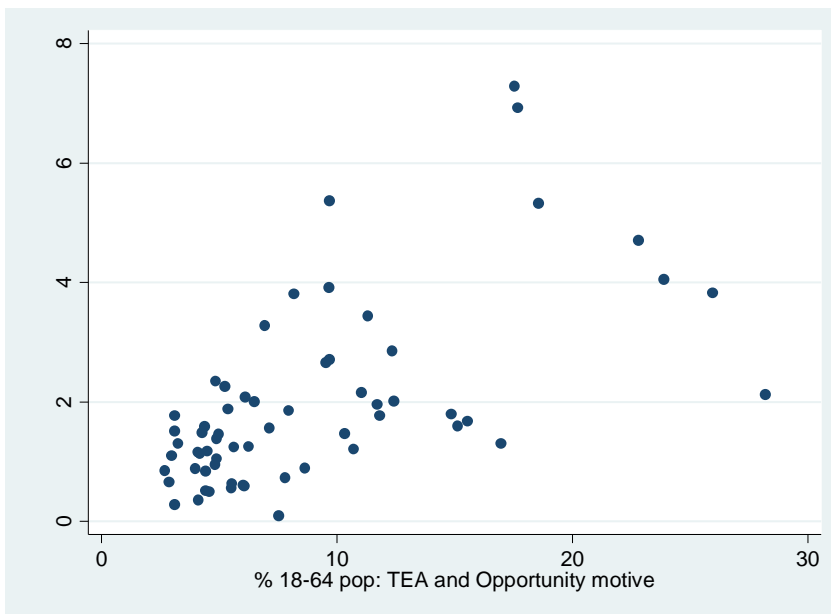
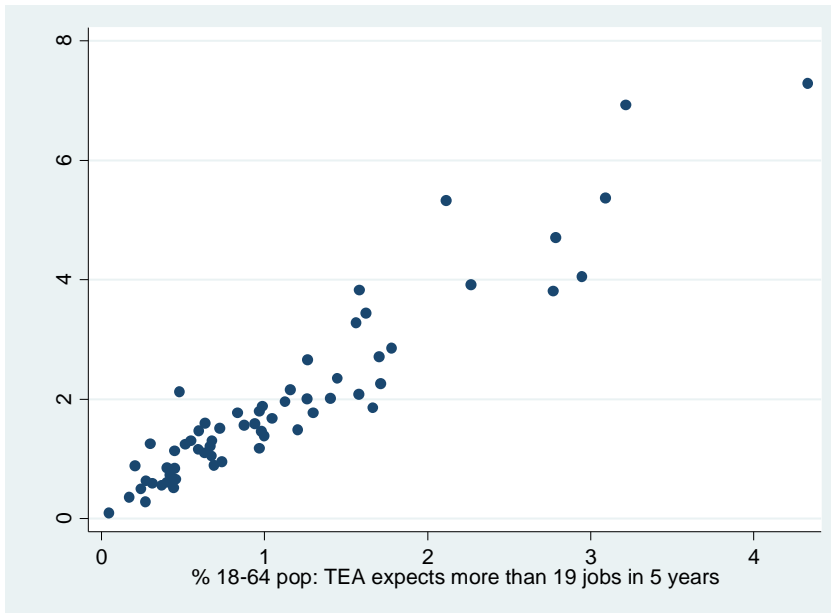
Figure 1. Krueger and Brazeal's Model of Entrepreneurial Potential



This figure illustrates the formation process of entrepreneurial intentions and triggering factors for each step of the process. Perceived desirability of entrepreneurship as a career choice, perceived feasibility of starting a new business, the propensity to act, and ‘displacement,’ a tipping event that pushes an individual to take action are introduced as key motivating factors of entrepreneurship. Displacement can be a positive event (the example given in the original paper is of inheriting a large amount of fortune) or a negative event (example in the original paper is loss of financial means or assets, forcing the individual to explore new sources of income).

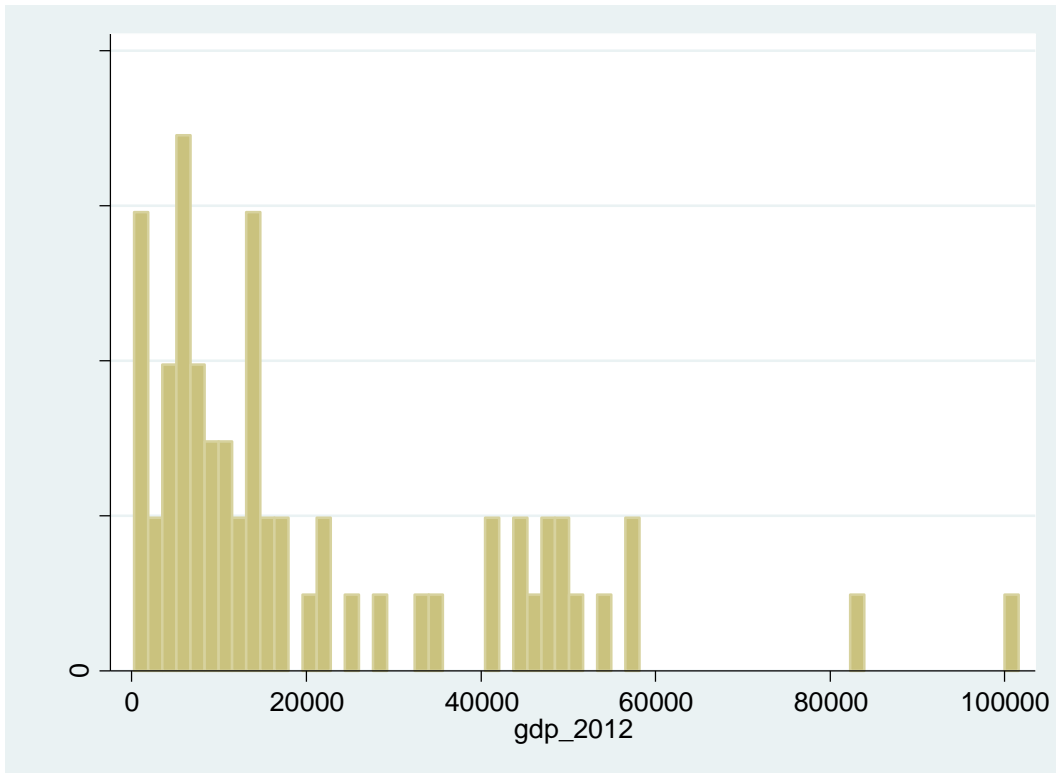
Source: Krueger and Brazeal 1994

Figure 2. Scatter plots between high growth TEA (expecting 10+ jobs and 50% growth in the next 5 years, the y-axis), high job growth TEA (expecting 19+ jobs in the next 5 years, the x-axis in upper graph), and opportunity TEA (driven by opportunity and not by necessity, the x-axis in graph below)



Source: GEM 2012 APS Global National Level Data

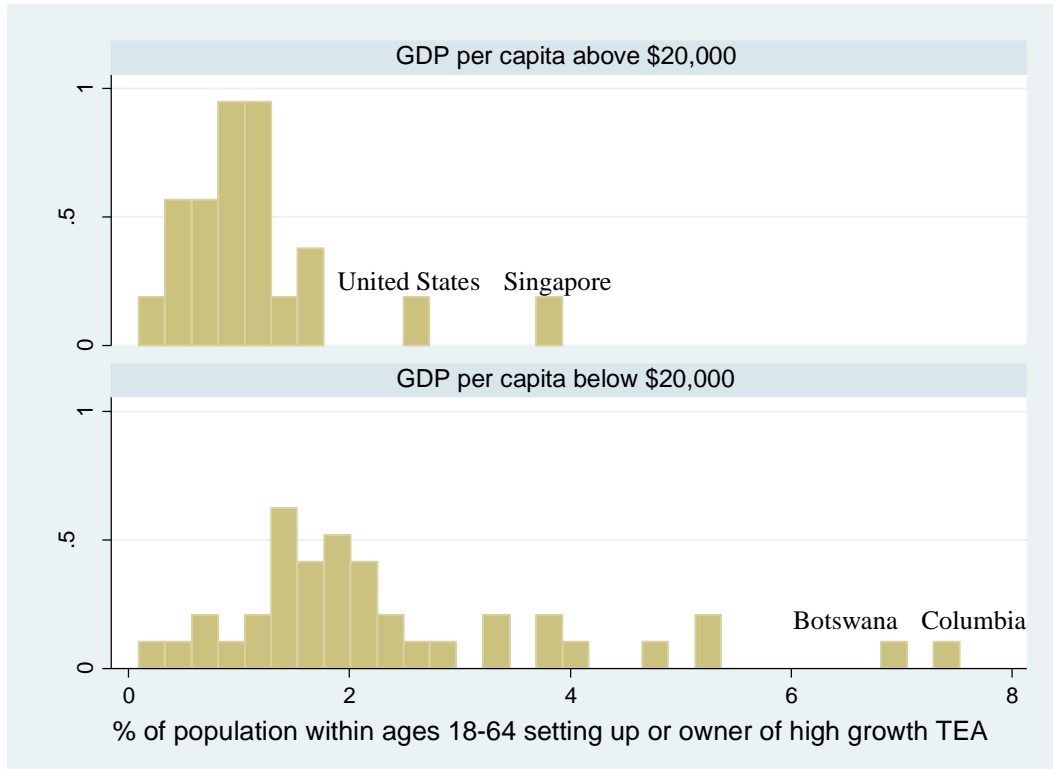
Figure 3. Histogram of the distribution of GDP per capita in USD for countries in the GEM 2012 data



Ethiopia, Malawi, and Uganda were excluded from the dataset due to their excessively low GDP per capita of below USD 1,000.

Source: World Bank GDP per Capita 2012

Figure 4. Distribution of high growth TEA in 2012 for developing and developed countries

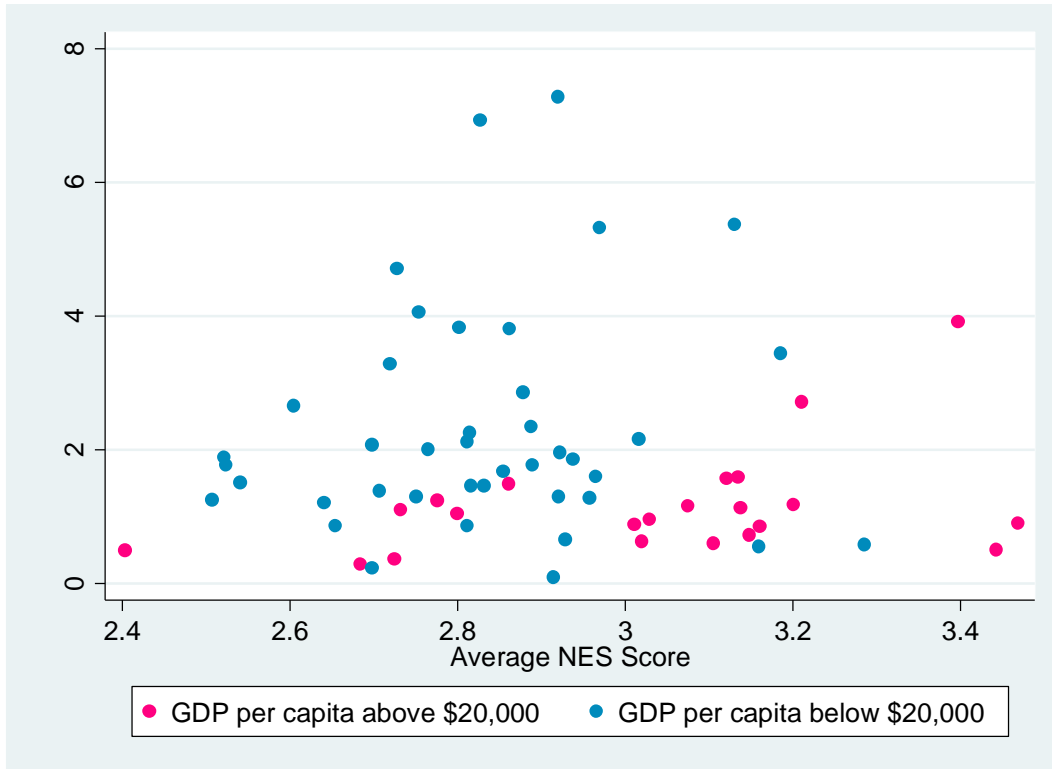


Outliers are labeled in each cohort.

Source: GEM 2012 APS Global National Level Data and World Bank GDP per Capita

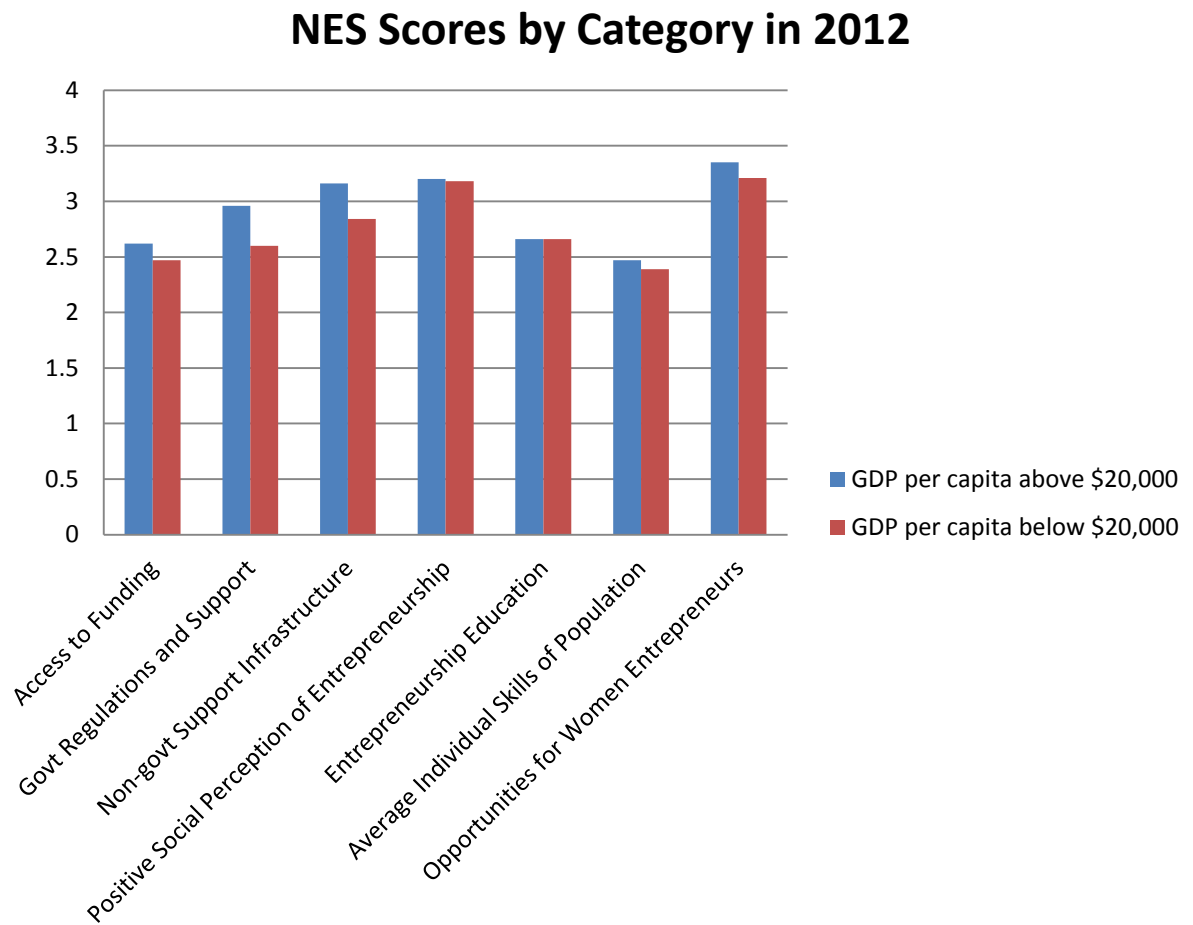
2012

Figure 5. Scatter plot of average NES scores for developed and developing countries in 2012



Source: GEM 2012 NES Global Individual Level Data and World Bank GDP per Capita 2012

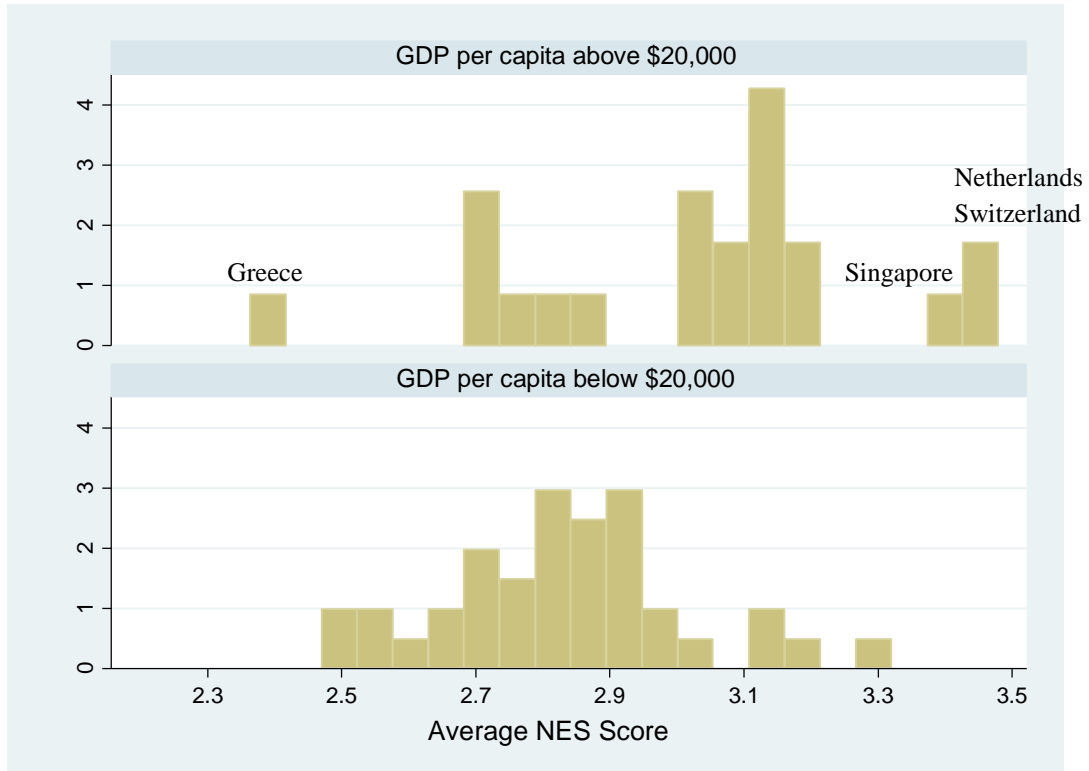
Figure 6. NES scores by category in 2012



Each category represents experts' average score for the given category.

Source: GEM 2012 NES Global Individual Level Data and World Bank GDP per Capita
2012

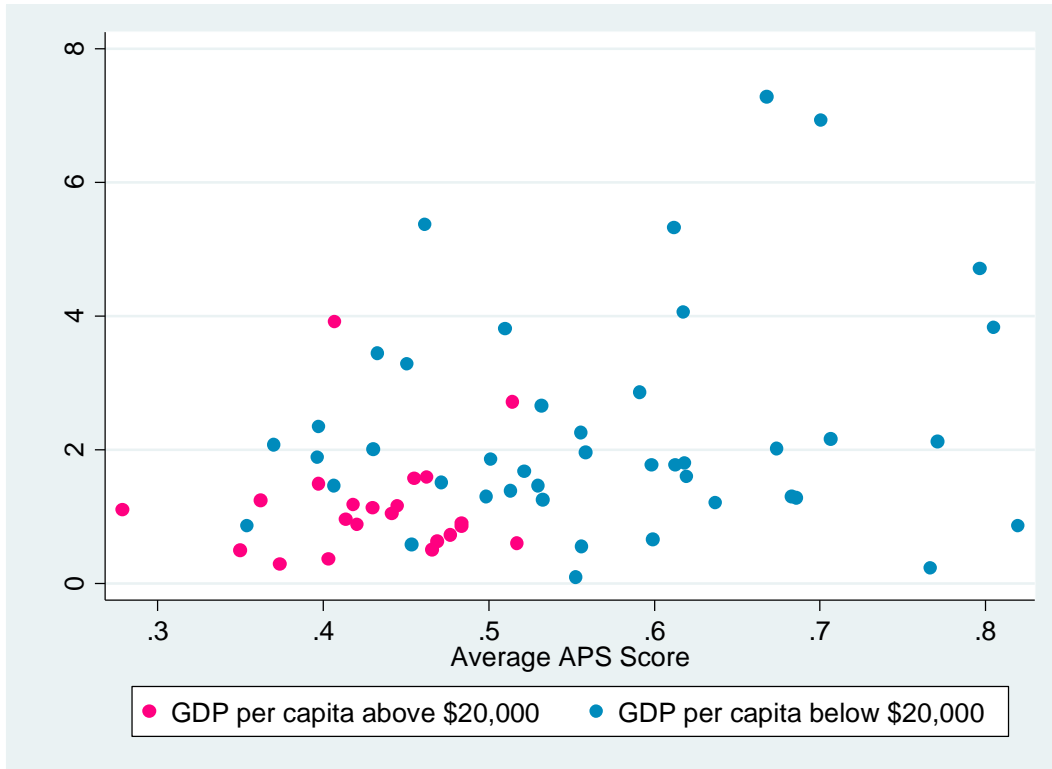
Figure 7. Distribution of average NES scores in 2012 for developing and developed countries



Outliers are labeled.

Source: GEM 2012 NES Global Individual Level Data and World Bank GDP per Capita 2012

Figure 8. Scatter plot of average APS scores for developed and developing countries in 2012



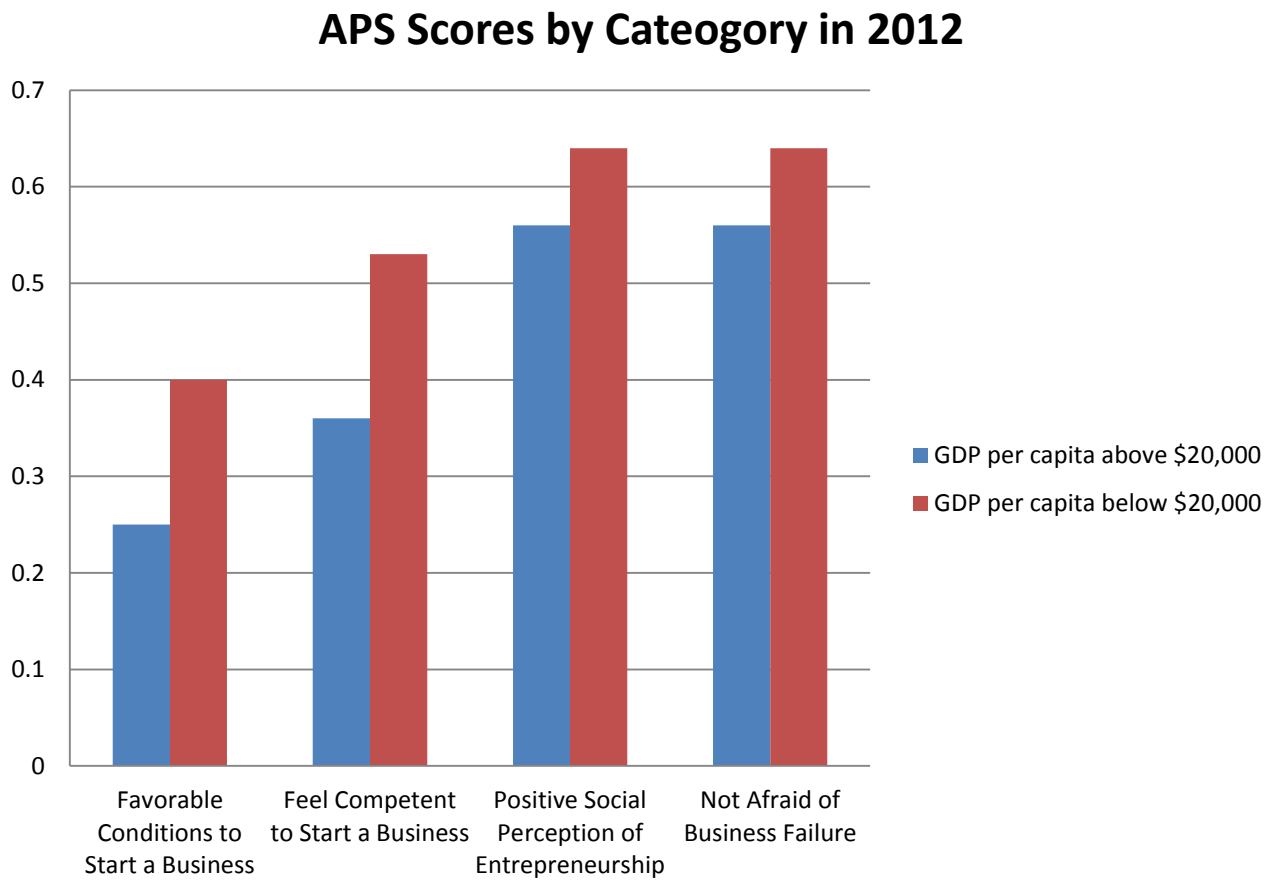
Source: GEM 2012 APS Global Individual Level Data and World Bank GDP per Capita 2012

Figure 9. Distribution of average APS scores in 2012 for developing and developed countries



Source: GEM 2012 APS Global Individual Level Data and World Bank GDP per Capita 2012

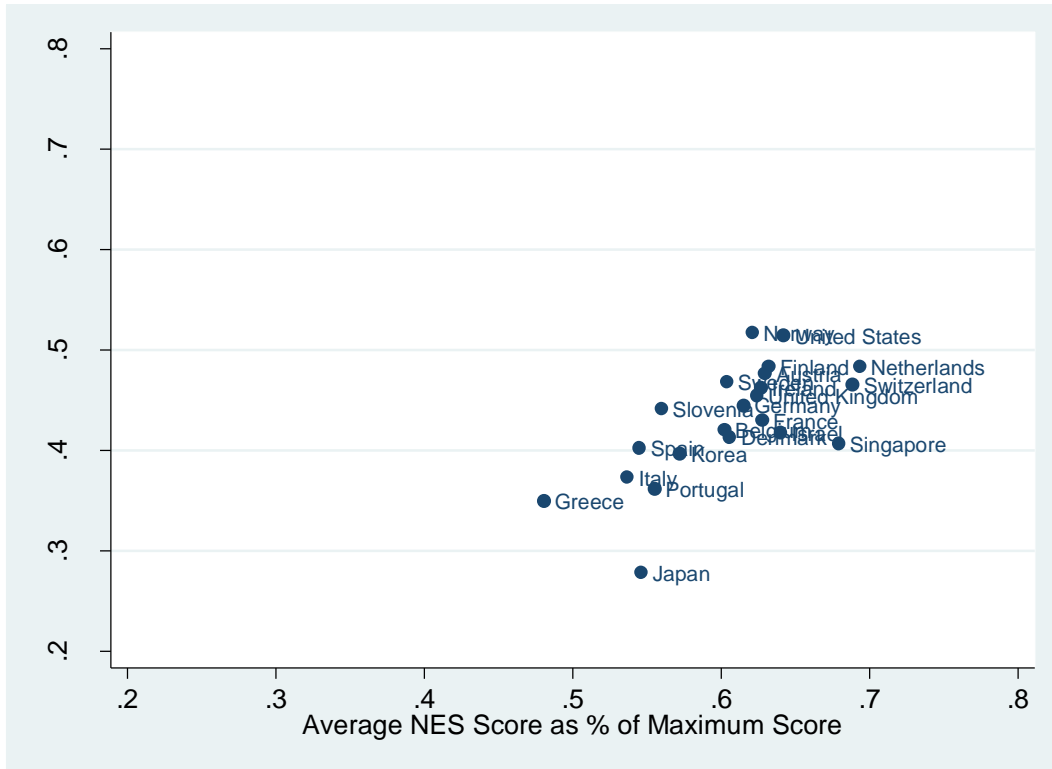
Figure 10. APS scores by category in 2012



Each category represents the general population's average score for the given category.

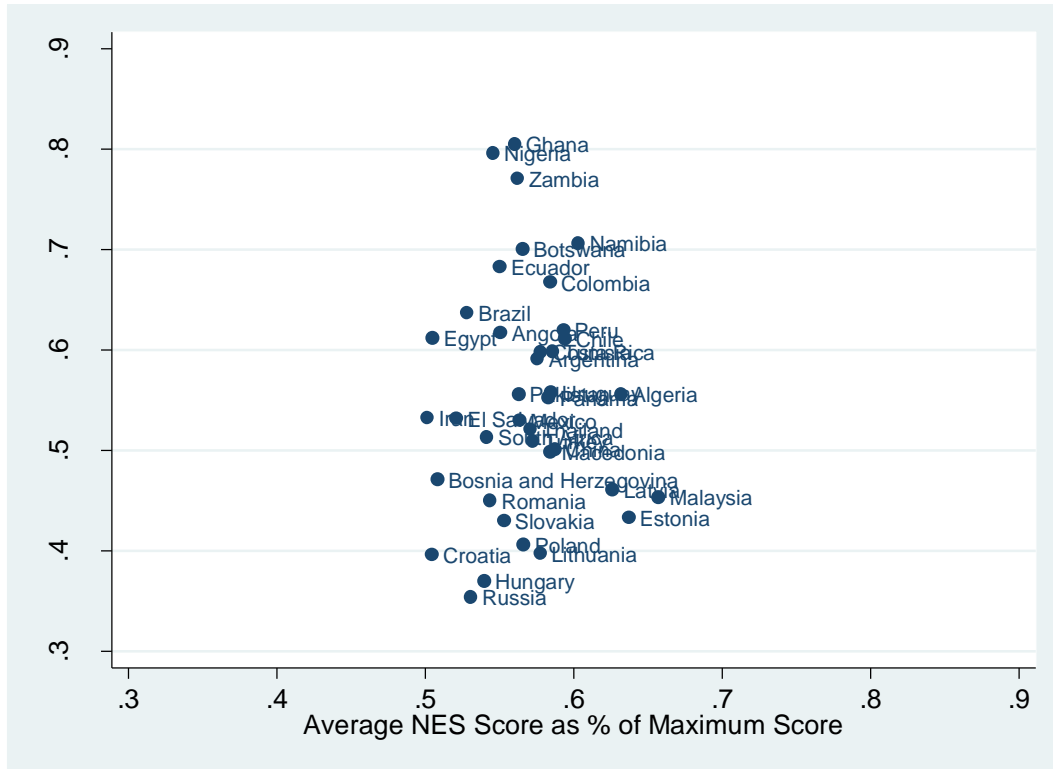
Source: GEM 2012 APS Global Individual Level Data and World Bank GDP per Capita 2012

Figure. 11. Scatter plot of average APS scores and average NES scores in 2012 for developed countries



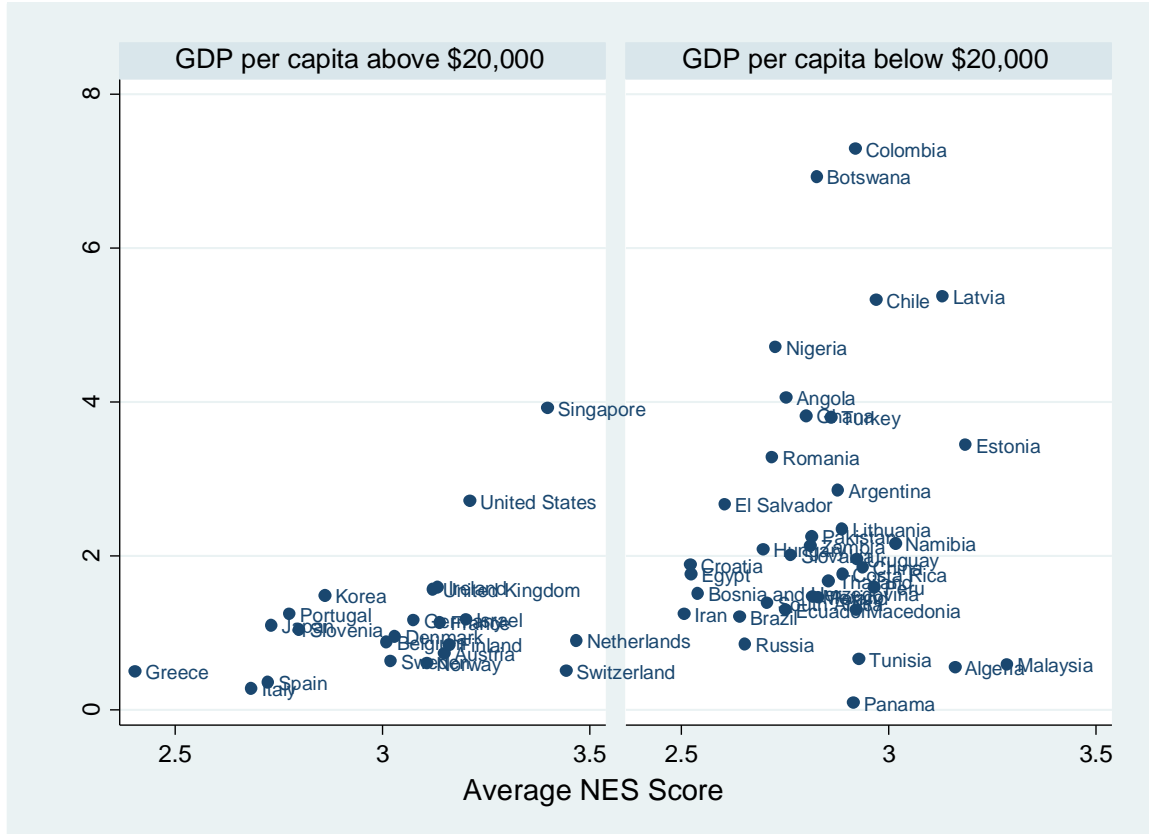
Source: GEM 2012 APS Global Individual Level Data, GEM 2012 NES Global Individual Level Data, and World Bank GDP per Capita 2012

Figure. 12. Scatter plot of average APS scores and average NES scores in 2012 for developing countries



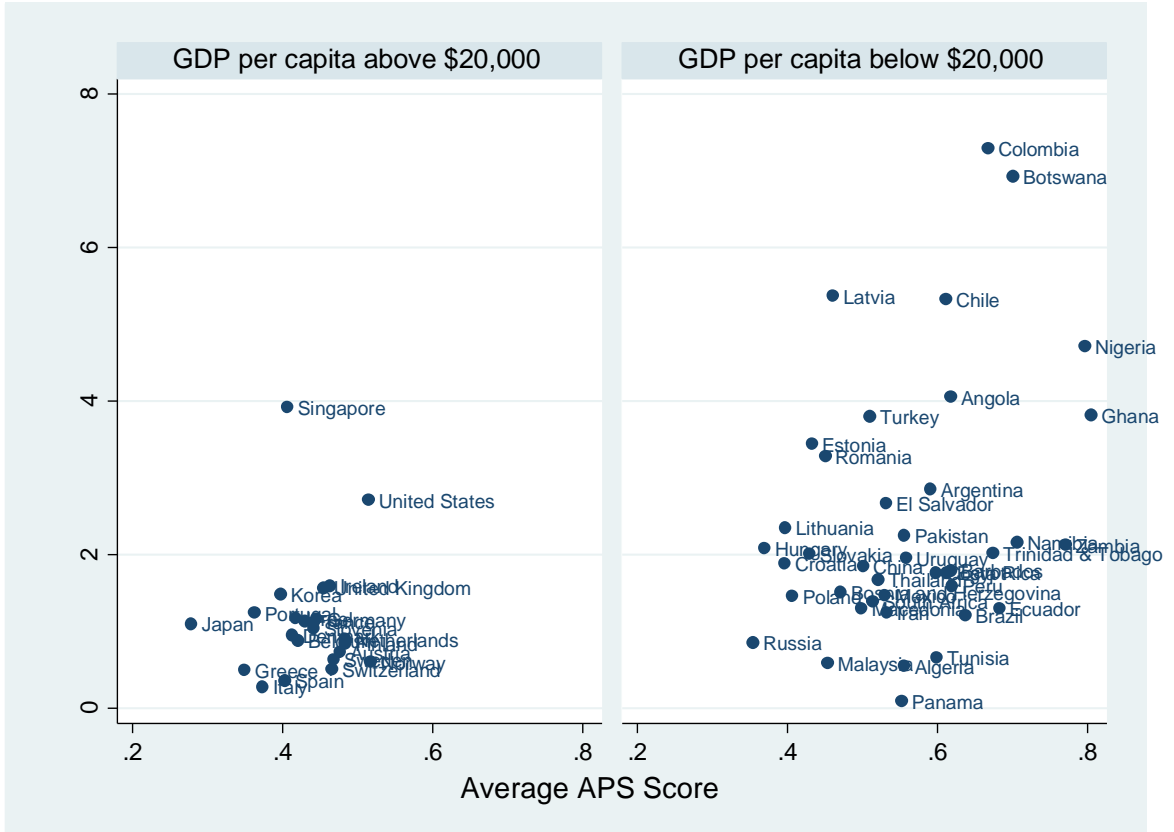
Source: GEM 2012 APS Global Individual Level Data, GEM 2012 NES Global Individual Level Data, and World Bank GDP per Capita 2012

Figure. 13. Scatter plot of high growth TEA against NES scores for developed and developing countries



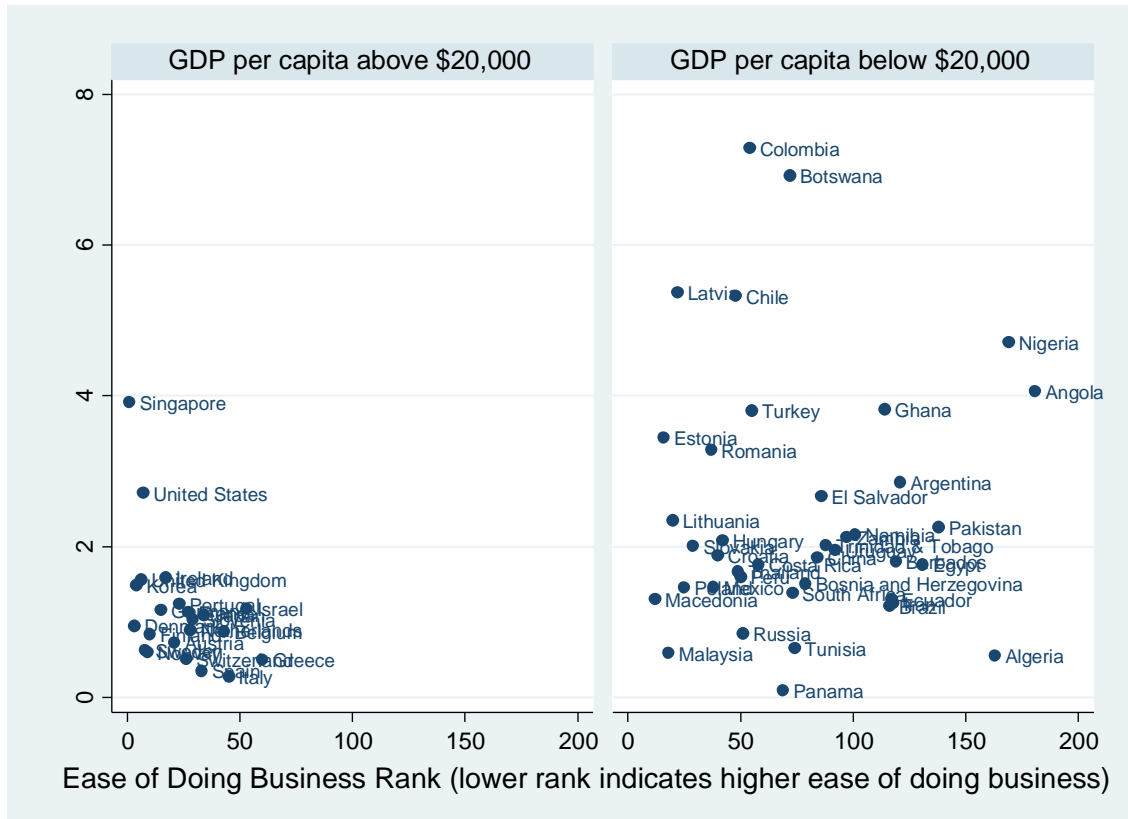
Source: GEM 2012 NES Global Individual Level Data and World Bank GDP per Capita 2012

Figure. 14. Scatter plot of high growth TEA against APS scores for developed and developing countries



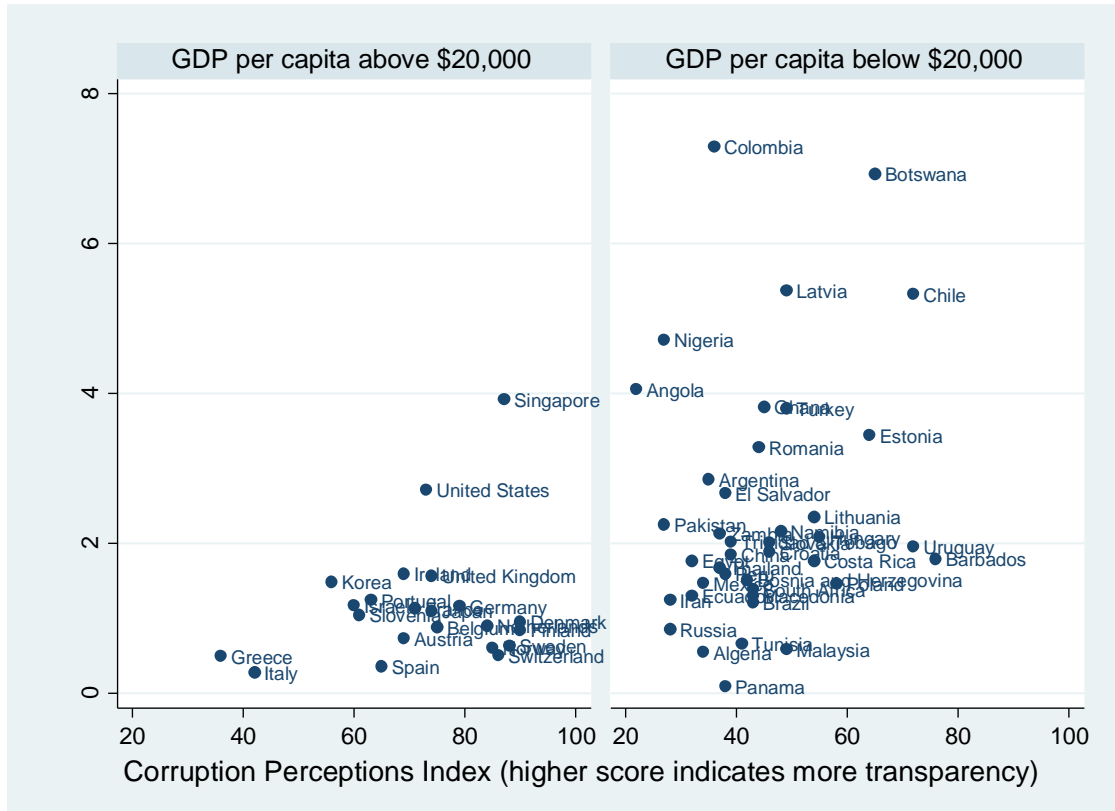
Source: GEM 2012 APS Global Individual Level Data and World Bank GDP per Capita 2012

Figure. 15. Scatter plot of high growth TEA against Ease of Doing Business Ranking for developed and developing countries



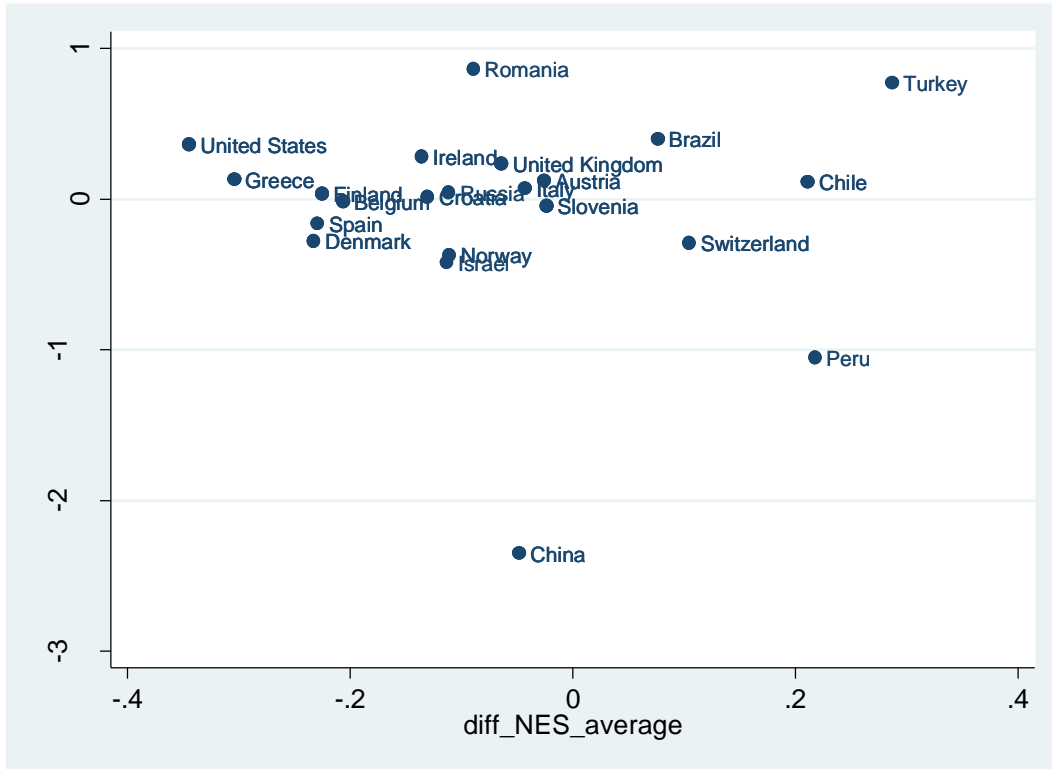
Source: Ease of Doing Business Ranking 2015 and World Bank GDP per Capita 2012

Figure. 16. Scatter plot of high growth TEA against CPI for developed and developing countries



Source: CPI 2012 and World Bank GDP per Capita 2012

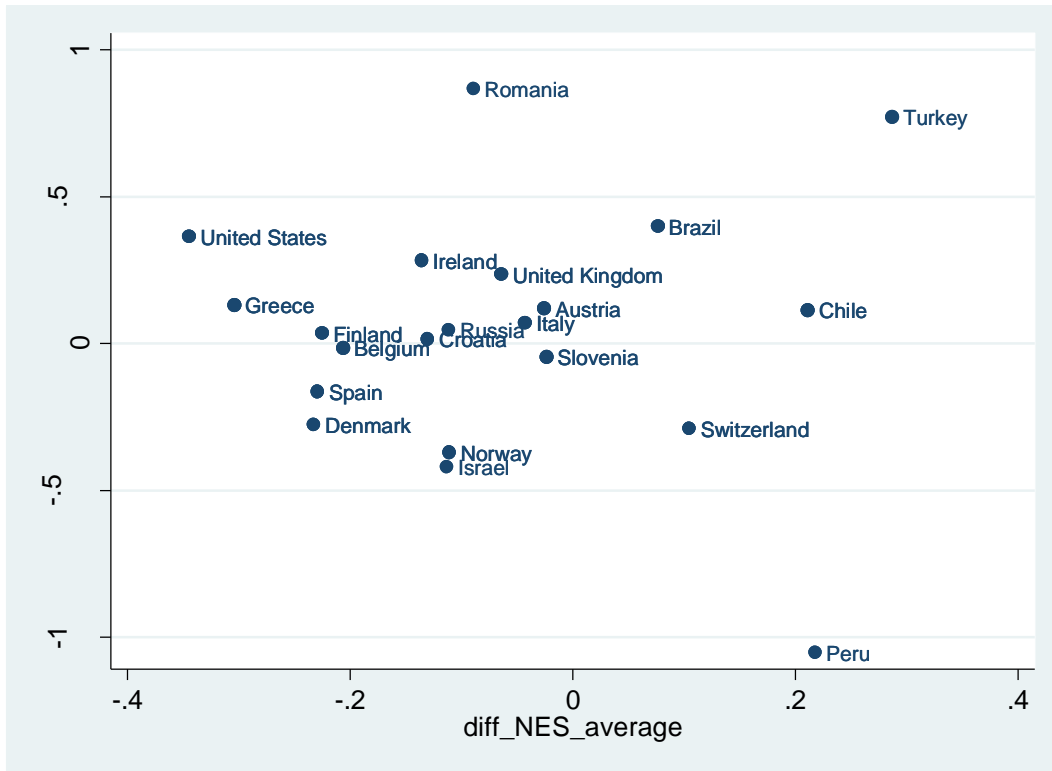
Figure. 17. Scatter plot of the difference in high growth TEA and average NES scores for GEM 2007 and 2012 data



Countries in this sample consist of both developed and developing countries.

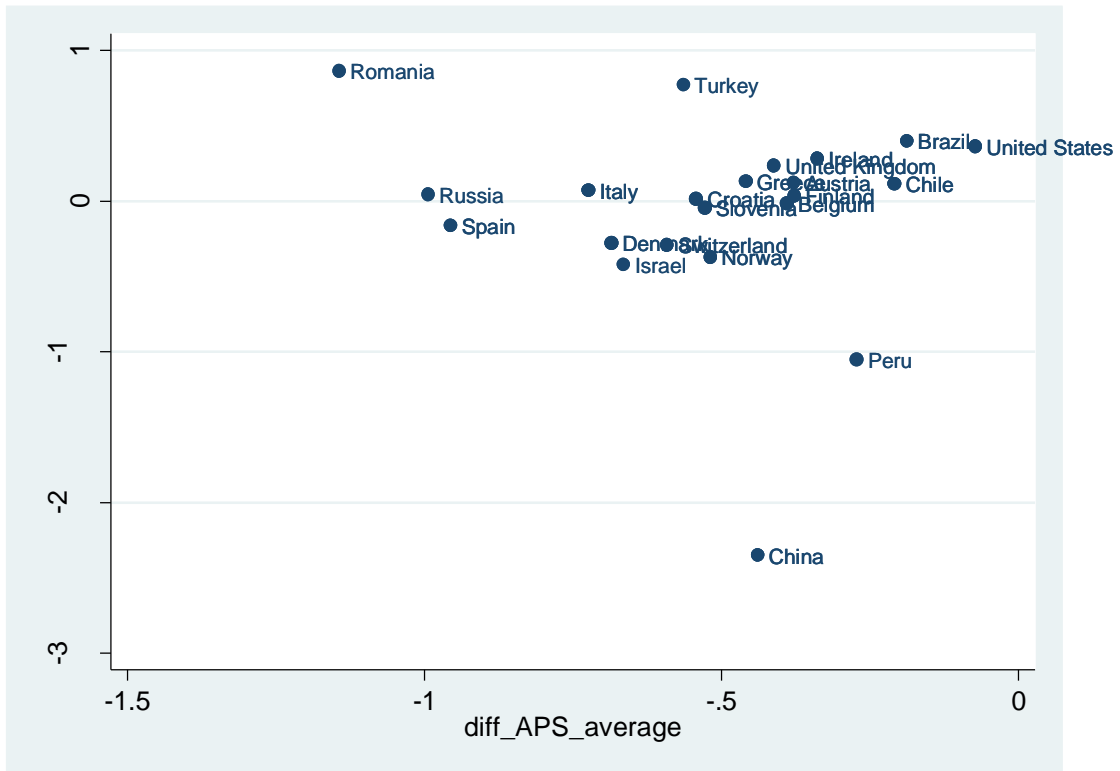
Source: GEM 2012 APS Global Individual Level Data and GEM 2007 APS Global Individual Level Data

Figure. 18. Scatter plot of fig. 17 without China (outlier)



Source: GEM 2012 APS Global Individual Level Data and GEM 2007 APS Global Individual Level Data

Figure. 19. Scatter plot of the difference in high growth TEA and average APS scores for GEM 2007 and 2012 data



Countries in this sample consist of both developed and developing countries.

Source: GEM 2012 NES Global Individual Level Data and NES 2007 APS Global Individual Level Data

VIII. Tables

Table 1. Correlation between high growth TEA (expecting 10+ jobs and 50% growth in the next 5 years, expressed as ‘TEAjob’), high job growth TEA (expecting 19+ jobs in the next 5 years, expressed as ‘TEA12HJG’), and opportunity-driven TEA (total early-stage entrepreneurial activity not driven by necessity motives; purely driven by opportunity, expressed as ‘TEA12opp’)

	TEAjob	TEA12HJG	TEA12opp
TEAjob	1.0000		
TEA12HJG	0.9424	1.0000	
TEA12opp	0.6073	0.4931	1.0000

Source: GEM 2012 APS Global National Level Data

Table 2. Grouped categories for each survey

NES	APS
Overall Average	Overall Average
Access to Funding	Feasibility (favorable conditions to start a business)
Government Regulations and Support	Individual Skills (personal competence – feels comfortable to start a business)
Non-government Support Infrastructure	Social Perception of Entrepreneurship
Education on Entrepreneurship	Fear of Failure (not afraid of business failure)
Social Perception of Entrepreneurship	
Individual Skills (personal competence)	
Opportunities for Women	

Table 3. Summary Statistics for GEM 2012 Data

	Developed Countries	Developing Countries
High growth TEA	1.14% (0.811)	2.41% (1.64)
Average APS score	43.02% (0.056)	55.73% (0.114)
Average NES score	3.02 (0.264)	2.83 (0.182)
Ease of doing business rank	22.81 (16.822)	76.65 (44.599)
CPI	71.68 (14.749)	43.95 (12.938)
NES score on funding	2.62 (0.391)	2.47 (0.355)
NES score on individual skills	2.47 (0.339)	2.39 (0.250)
NES score on opportunities for women	3.53 (0.427)	3.21 (0.384)
NES score on government regulations and support	2.96 (0.348)	2.60 (0.239)
% within population age 18-64: TEA exports: more than 50% customers outside country	0.94% (0.593)	1.31% (1.281)
within TEA: Active in technology sectors (high or medium)	8.42% (3.09)	3.22% (2.168)
within TEA: Uses very latest technology (only available since last year)	10.20% (4.44)	12.44% (8.869)
within TEA: Uses new technology (1 to 5 years)	20.00% (5.61)	17.08% (7.258)
% within population age 18-64: TEA and Opportunity motive	5.39% (1.95)	10.73% (6.657)
% within population age 18-64: TEA and Necessity motive (enter because of no better choice for work)	1.20% (0.618)	4.38% (2.954)
% within TEA: Opportunity motive: increase income	27.89% (7.14)	26.15% (8.507)
% within TEA: Opportunity motive: independence	26.58% (10.077)	19.27% (7.468)

Values represent the mean of the variable with standard deviation in parentheses.

Source: GEM 2012 APS Global National Level Data and World Bank GDP per Capita

2012

Table 4. Correlation between average NES scores, average APS scores, ease of doing business ranking, and CPI for year 2012

	NES_a~12	APS_a~12	easeof~k	corrupt
NES_avera~12	1.0000			
APS_avera~12	0.0237	1.0000		
easeofdoin~k	-0.4617	0.5972	1.0000	
corrupt	0.6768	-0.2981	-0.7087	1.0000

Variable descriptions are as follows: NES_average_12: average NES scores in 2012, APS_average_12: average APS scores in 2012, easeofdoingbusinessrank: 2015 Ease of Doing Business Ranking, corrupt: CPI 2012.

Source: GEM 2012 APS Global Individual Level Data, GEM 2012 NES Global Individual Level Data, 2015 Ease of Doing Business Ranking, and 2012 CPI

Table 5. Linear regression of high growth TEA on average NES scores, average APS scores, Ease of Doing Business rank, and CPI.

VARIABLES	(1) Developed - High growth TEA	(2) Developing - High growth TEA
Average NES Score	2.752*** (0.871)	-0.413 (1.551)
Average APS Score	-8.091** (3.311)	7.156** (2.970)
Ease of Doing Business Rank	-0.0368*** (0.0110)	-0.00589 (0.00889)
Corruption Perceptions Index	-0.0356** (0.0157)	0.0379 (0.0266)
Constant	-0.319 (1.852)	-1.546 (4.326)
Observations	22	38
R-squared	0.539	0.227

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Column (1) includes developed countries, as measured by a threshold of GDP per capita above \$20,000, while column (2) includes developing countries. Regression model shown in equation (1) was used.

Source: GEM 2012 APS Global Individual Level Data, GEM 2012 NES Global Individual Level Data, 2015 Ease of Doing Business Ranking, 2012 CPI, and World Bank GDP per Capita 2012

Table 6. Correlation between factors within NES scores

	ave_fu~g	ave_govt	ave_edu	ave_in~a	ave_so~l	ave_sk~l	ave_fe~e
ave_funding	1.0000						
ave_govt	0.6409	1.0000					
ave_edu	0.4334	0.4421	1.0000				
ave_infra	0.5399	0.7981	0.4430	1.0000			
ave_social	0.6133	0.5184	0.6558	0.4864	1.0000		
ave_skill	0.2629	0.2247	0.6371	0.4178	0.5391	1.0000	
ave_female	0.3120	0.5155	0.6416	0.4657	0.4804	0.4427	1.0000

Factors represent the grouped categories as mentioned in section IV. Methodology, following Azjen’s theory of planned behavior and Shapero’s model of entrepreneurial event (see table 2). Ave_funding: NES score for access to funding, ave_govt: NES score for government regulations and support, ave_edu: NES score for entrepreneurship education, ave_infra: NES score for non-government support infrastructure, ave_social: NES score for social perception of entrepreneurship, ave_skill: NES score for average individuals skills of population, ave_female: NES score for opportunities for women entrepreneurs.

Source: GEM 2012 NES Global Individual Level Data

Table 7. Correlation between factors within APS scores

	APS_fe~e	APS_sk~l	APS_so~l	APS_fe~l
APS_feasible	1.0000			
APS_skill	0.7532	1.0000		
APS_social	0.6981	0.6204	1.0000	
APS_fearfail	0.6631	0.5413	0.4835	1.0000

Factors represent the grouped categories as mentioned in section IV. Methodology, following Azjen’s theory of planned behavior and Shapero’s model of entrepreneurial event (see table 2). APS_feasible: APS score for favorable conditions to start a business, APS_skill: APS score for feeling competent to start a business, APS_social: APS score for social perception of entrepreneurship, ave_fearfail: APS score for not fearing business failure.

Source: GEM 2012 APS Global Individual Level Data

Table 8. Linear regression of high growth TEA on NES score components

VARIABLES	(1) Developed - High growth TEA	(2) Developing - High growth TEA	(3) Developed - High growth TEA	(4) Developing - High growth TEA
NES score on access to funding	1.178** (0.447)	-0.0633 (0.855)		
NES score on individual skills	-0.389 (0.519)	0.587 (1.322)	-0.217 (0.501)	0.413 (1.222)
NES score on opportunities for women	-0.0946 (0.445)	-0.0575 (0.837)		
NES score on government regulations and support			0.932* (0.488)	0.303 (1.279)
Constant	-0.666 (1.568)	1.375 (3.272)	-1.076 (1.905)	0.659 (3.534)
Observations	22	38	22	38
R-squared	0.305	0.006	0.168	0.008

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Column (1) includes developed countries, as measured by a threshold of GDP per capita above \$20,000, while column (2) includes developing countries. Regression model shown in equation (2) was used.

Source: GEM 2012 NES Global Individual Level Data and World Bank GDP per Capita 2012

Table 9. Linear regression of high growth TEA on exports, technology sector, and technology

VARIABLES	(1) High Growth TEA	(2) High Growth TEA	(3) High Growth TEA
% 18-64 pop: TEA exports: more than 50% customers outside country	0.989*** (0.212)		
% within TEA: Active in technology sectors (high or medium)		-0.0638 (0.0569)	
% within TEA: Uses very latest technology (only available since last year)			0.000576 (0.0421)
% within TEA: Uses new technology (1 to 5 years)			0.0300 (0.0333)
Constant	0.219 (0.234)	1.686*** (0.509)	0.543 (0.730)
Observations	22	22	22
R-squared	0.522	0.059	0.0043

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Regression was conducted only on countries with GDP per capita above USD 20,000.

Regression model shown in equation (3) was used. Variables as specified in the regression model and GEM 2012 APS National Level Data are below.

TEA12HIX: % 18-64 pop: TEA exports: more than 50% customers outside country

Tea12tec: % within TEA: Active in technology sectors (high or medium)

TEA12nt1: % within TEA: Uses very latest technology (only available since last year)

TEA12nt2: % within TEA: Uses new technology (1 to 5 years)

Source: GEM 2012 APS Global National Level Data

Table 10. Linear regression of entrepreneurship motive against high growth TEA

VARIABLES	(1) High Growth TEA	(2) High Growth TEA
% 18-64 pop: TEA and Opportunity motive	0.211*** (0.0696)	
% 18-64 pop: TEA and Necessity motive (enter because of no better choice for work)	0.491** (0.220)	
% within TEA: Opportunity motive: increase income		0.0436* (0.0251)
% within TEA: Opportunity motive: independence		-0.0125 (0.0178)
Constant	-0.580 (0.398)	0.262 (0.751)
Observations	22	22
R-squared	0.529	0.139

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regression was conducted only on countries with GDP per capita above USD 20,000.

Regression model shown in equation (4) was used. Variables as specified in the regression model and GEM 2012 APS National Level Data are below.

TEA12opp: % 18-64 pop: TEA and Opportunity motive

Tea12nec: % 18-64 pop: TEA and Necessity motive (enter because of no better choice for work)

TEA12MT1: % within TEA: Opportunity motive: increase income

TEA12MT2: % within TEA: Opportunity motive: independence

Source: GEM 2012 APS Global National Level Data

IX. Appendix

A. Important Variables and Description

1. TEA

Total early-stage entrepreneurship activity.

In the GEM 2012 Survey Data: TEA12

2. High growth TEA

Expecting to create 10 or more jobs and experience growth in excess of 50% over the next 5 years.

In the GEM 2012 Survey Data: TEA12job

3. High job growth TEA

Expecting to create 19 or more jobs over the next 5 years.

In the GEM 2012 Survey Data: TEA12hjb

4. Opportunity-driven TEA

% of population setting up/owner of a new business because they wanted to pursue an opportunity, not because they needed a new source of income or work.

In the GEM 2012 Survey Data: TEA12opp

5. GEM

Global Entrepreneurship Monitor.

Full dataset can be found here: <http://www.gemconsortium.org/>

6. CPI

Corruption Perceptions Index. Measures how corrupt a country's public sector is.

High score means better transparency and less corruption.

Full dataset can be found here: <http://www.transparency.org/>

7. APS

Adult Population Survey of GEM. Survey data from 2,000 to 10,000 individuals across various countries. Full dataset can be accessed at the GEM homepage.

8. NES

National Expert Survey of GEM. Survey data from various experts including: entrepreneurs, investors, bankers, financiers, policy maker, business and support services provider, and educator/teacher/entrepreneurship researcher. Full dataset can be accessed at the GEM homepage.

9. TEA12HIX

% within population age 18-64: TEA exports more than 50% customers outside country

10. Tea12tec

% within TEA: Active in technology sectors (high or medium)

11. Tea12nt1

% within TEA: Uses very latest technology (only available since last year)

12. TEA12nt2

% within TEA: Uses new technology (1 to 5 years)

13. TEA12opp

% 18-64 pop: TEA and Opportunity motive

14. Tea12nec:

% 18-64 pop: TEA and Necessity motive (enter because of no better choice for work)

15. TEA12MT1

% within TEA: Opportunity motive: increase income

16. TEA12MT2

% within TEA: Opportunity motive: independence

B. List of Countries Studied by Year

1. GEM 2012 Data

GDP per Capita > USD 20,000	GDP per Capita < USD 20,000
Austria	Algeria
Belgium	Angola
Denmark	Argentina
Finland	Barbados
France	Bosnia and Herzegovina
Germany	Botswana
Greece	Brazil
Ireland	Chile
Israel	China
Italy	Colombia
Japan	Costa Rica
Korea	Croatia
Netherlands	Ecuador
Norway	Egypt
Portugal	El Salvador
Singapore	Estonia
Slovenia	Ghana
Spain	Hungary
Sweden	Iran
Switzerland	Latvia
United Kingdom	Lithuania
United States	Macedonia
	Malaysia
	Mexico
	Namibia
	Nigeria
	Pakistan
	Panama
	Peru
	Poland
	Romania
	Russia
	Slovakia
	South Africa
	Thailand
	Trinidad & Tobago

	Tunisia
	Turkey
	Uruguay
	Zambia

2. GEM 2007 data

Country Name
United States
Russia
Greece
Belgium
Spain
Italy
Romania
Switzerland
Austria
United Kingdom
Denmark
Norway
Peru
Brazil
Chile
Turkey
Ireland
Iceland
Finland
Serbia
Croatia
Slovenia
Kazakhstan
United Arab Emirates
Israel
Dominican Republic
China

C. List of Questions for APS and NES Category Grouping

GEM 2007 Data variables are very similar to those in GEM 2012 Data. Hence, I only outline the variables in GEM 2012 Data.

1. GEM 2012 APS Individual Level Data

a. Feasibility

Variable	Label (survey question)
opport	In the next six months, will there be good opportunities for starting a business in the area where you live?

b. Individual Skills (personal competence)

Variable	Label (survey question)
suskil	Do you have the knowledge, skill and experience required to start a new business?

c. Social Perception of Entrepreneurship

Variable	Label (survey question)
nbgoodc	In my country, most people consider starting a new business a desirable career choice.
nbstatus	In my country, those successful at starting a new business have a high level of status and respect.
nbmedia	In my country, you will often see stories in the public media about successful new businesses.

d. Fear of Failure

Variable	Label (survey question)
fearfail	Would fear of failure prevent you from starting a business?

2. GEM 2012 NES Individual Level Data

a. Access to funding

Variable	Label (survey question)
NES12_A01	In my country, there is sufficient equity funding available for new and growing firms
NES12_A02	In my country, there is sufficient debt funding available for new and growing firms

NES12_A03	In my country, there are sufficient government subsidies available for new and growing firms
NES12_A04	In my country, there is sufficient funding available from private individuals (other than founders) for new and growing firms
NES12_A05	In my country, there is sufficient venture capitalist funding available for new and growing firms)
NES12_A06	In my country, there is sufficient funding available through initial public offerings (IPOs) for new and growing firms

b. Government Regulations and Support

Variable	Label (survey question)
NES12_B01	In my country, Government policies (e g , public procurement) consistently favor new firms
NES12_B02	In my country, the support for new and growing firms is a high priority for policy at the national government level
NES12_B03	In my country, the support for new and growing firms is a high priority for policy at the local government level
NES12_B04	In my country, new firms can get most of the required permits and licenses in about a week
NES12_B05	In my country, the amount of taxes is NOT a burden for new and growing firms
NES12_B06	In my country, taxes and other government regulations are applied to new and growing firms in a predictable and consistent way
NES12_B07	In my country, coping with government bureaucracy, regulations, and licensing requirements it is not unduly difficult for new and growing firms
NES12_C01	In my country, a wide range of government assistance for new and growing firms can be obtained through contact with a single agency
NES12_C02	In my country, science parks and business incubators provide effective support for new and growing firms
NES12_C03	In my country, there are an adequate number of government programs for new and growing businesses
NES12_C04	In my country, the people working for government agencies are competent and effective in supporting new and growing firms
NES12_C05	In my country, almost anyone who needs help from a government program for a new or growing business can find what they need
NES12_C06	In my country, Government programs aimed at supporting new and growing firms are effective
NES12_N01	In my country, the Intellectual Property Rights (IPR) legislation is comprehensive
NES12_N02	In my country, the Intellectual Property Rights (IPR) legislation is efficiently enforced
NES12_N03	In my country, the illegal sales of 'pirated' software, videos, CDs, and

	other copyrighted or trademarked products is not extensive
NES12_N04	In my country, new and growing firms can trust that their patents, copyrights, and trademarks will be respected
NES12_N05	In my country, it is widely recognized that inventors' rights for their inventions should be respected
NES12_V01	In my country laws and regulations to promote and support entrepreneurial activity of migrants coming from developing countries are adequate.
NES12_V02	In my country laws and regulations to promote and support entrepreneurial activity of migrants coming from developed countries are adequate.
NES12_V03	In my country foreigners from developing countries experience a greater number of formal restrictions than natives, when they want to start-up a business.
NES12_V04	In my country foreigners from developed countries experience a greater number of formal restrictions than natives, when they want to start-up a business.
NES12_V05	In my country entrepreneurs who have migrated from developing countries have worse access to private sector finance than native entrepreneurs
NES12_V06	In my country entrepreneurs who have migrated from developed countries have worse access to private sector finance than native entrepreneurs.
NES12_V07	In my country entrepreneurs who have migrated from developing countries have worse access to start-up support programs than native entrepreneurs
NES12_V08	In my country entrepreneurs who have migrated from developed countries have worse access to start-up support programs than native entrepreneurs
NES12_V09	In my country migration and integration policy explicitly identifies the potential of entrepreneurial activity.

c. Education on Entrepreneurship

Variable	Label (survey question)
NES12_D01	In my country, teaching in primary and secondary education encourages creativity, self-sufficiency, and personal initiative
NES12_D02	In my country, teaching in primary and secondary education provides adequate instruction in market economic principles
NES12_D03	In my country, teaching in primary and secondary education provides adequate attention to entrepreneurship and new firm creation
NES12_D04	In my country, Colleges and universities provide good and adequate preparation for starting up and growing new firms

NES12_D05	In my country, the level of business and management education provide good and adequate preparation for starting up and growing new firms
NES12_D06	In my country, the vocational, professional, and continuing education systems provide good and adequate preparation for starting up and growing new firms
NES12_Y101	In my country, youth have easy access to primary and secondary education
NES12_Y102	In my country, most of the youth have no option other than to find work
NES12_Y103	In my country, youth are pushed into business activity out of necessity
NES12_Y104	In my country, families expect youth to contribute to the family's finance
NES12_Y105	In my country, the youth involved in business activity are more likely to be self-employed than an employee (work for someone else)
NES12_Y106	In my country, self-employed youth learn to develop their business activities largely through their own experience and relationships
NES12_Y107	In my country, there are many opportunities to develop micro businesses for youth
NES12_Y108	In my country, governmental programs effectively train and support youth entrepreneurs
NES12_Y201	In my country, conflict situations form a substantial barrier for youth/young adults to start and grow a business
NES12_Y202	In my country, the young adults are significantly involved in entrepreneurship
NES12_Y203	In my country, youth and young adults face greater constraints to entrepreneurship relative to the general adult population
NES12_Y204	In my country, there is an adequate system of business incubators that can be accessed by
NES12_Y205	In my country, most of young adults that become entrepreneurs have been helped to start up by their families, close relatives or friends
NES12_Y206	In my country, financiers (banks, informal investors, business angel..) fund young adults business initiatives
NES12_Y207	In my country, micro-credit facilities for young adults to start a business are efficient
NES12_Y208	In my country, the young adults consider life/work opportunities outside the country to be more attractive

d. Non-government Support Infrastructure

Variable	Label (survey question)
NES12_E01	In my country, new technology, science, and other knowledge are efficiently transferred from universities and public research centers to

	new and growing firms
NES12_E02	In my country, new and growing firms have just as much access to new research and technology as large, established firms
NES12_E03	In my country, new and growing firms can afford the latest technology
NES12_E04	In my country, there are adequate government subsidies for new and growing firms to acquire new technology
NES12_E05	In my country, the science and technology base efficiently supports the creation of world-class new technology-based ventures in at least one area
NES12_E06	In my country, there is good support available for engineers and scientists to have their ideas commercialized through new and growing firms
NES12_F01	In my country, there are enough subcontractors, suppliers, and consultants to support new and growing firms
NES12_F02	In my country, new and growing firms can afford the cost of using subcontractors, suppliers, and consultants
NES12_F03	In my country, it is easy for new and growing firms to get good subcontractors, suppliers, and consultants
NES12_F04	In my country, it is easy for new and growing firms to get good, professional legal and accounting services
NES12_F05	In my country, it is easy for new and growing firms to get good banking services (checking accounts, foreign exchange transactions, letters of credit, and the like)
NES12_G01	In my country, the markets for consumer goods and services change dramatically from year to year
NES12_G02	In my country, the markets for business-to-business goods and services change dramatically from year to year
NES12_G03	In my country, new and growing firms can easily enter new markets
NES12_G04	In my country, the new and growing firms can afford the cost of market entry
NES12_G05	In my country, new and growing firms can enter markets without being unfairly blocked by established firms
NES12_G06	In my country, the anti-trust legislation is effective and well enforced
NES12_H01	In my country, the physical infrastructure (roads, utilities, communications, waste disposal) provides good support for new and growing firms
NES12_H02	In my country, it is not too expensive for a new or growing firm to get good access to communications (phone, Internet, etc.)
NES12_H03	In my country, a new or growing firm can get good access to communications (telephone, internet, etc.) in about a week
NES12_H04	In my country, new and growing firms can afford the cost of basic utilities (gas, water, electricity, sewer)
NES12_H05	In my country, new or growing firms can get good access to utilities

	(gas, water, electricity, sewer) in about a month
NES12_Q01	In my country, there are many support initiatives that are specially tailored for high-growth entrepreneurial activity
NES12_Q02	In my country, policy-makers are aware of the importance of high-growth entrepreneurial activity
NES12_Q03	In my country, people working in entrepreneurship support initiatives have sufficient skills and competence to support high-growth firms
NES12_Q04	In my country, potential for rapid growth is often used as a selection criterion when choosing recipients of entrepreneurship support
NES12_Q05	In my country, government programs are highly selective when choosing recipients of entrepreneurship support

e. Social Perception of Entrepreneurship

Variable	Label (survey question)
NES12_I01	In my country, the national culture is highly supportive of individual success achieved through own personal efforts
NES12_I02	In my country, the national culture emphasizes self-sufficiency, autonomy, and personal initiative
NES12_I03	In my country, the national culture encourages entrepreneurial risk-taking
NES12_I04	In my country, the national culture encourages creativity and innovativeness
NES12_I05	In my country, the national culture emphasizes the responsibility that the individual (rather than the collective) has in managing his or her own life
NES12_K01	In my country, there are plenty of good opportunities for the creation of new firms
NES12_K02	In my country, there are more good opportunities for the creation of new firms than there are people able to take advantage of them
NES12_K03	In my country, good opportunities for new firms have considerably increased in the past five years
NES12_K04	In my country, individuals can easily pursue entrepreneurial opportunities
NES12_K05	In my country, there are plenty of good opportunities to create truly high growth firms
NES12_M01	In my country, the creation of new ventures is considered an appropriate way to become rich
NES12_M02	In my country, most people consider becoming an entrepreneur as a desirable career choice
NES12_M03	In my country, successful entrepreneurs have a high level of status and respect
NES12_M04	In my country, you will often see stories in the public media about successful entrepreneurs

NES12_M05	In my country, most people think of entrepreneurs as competent, resourceful individuals
NES12_R01	In my country, companies like to experiment with new technologies and with new ways of doing things
NES12_R02	In my country, consumers like to try out new products and services
NES12_R03	In my country, innovation is highly valued by companies
NES12_R04	In my country, innovation is highly valued by consumers
NES12_R05	In my country, established companies are open to using new, entrepreneurial companies as suppliers
NES12_R06	In my country, consumers are open to buying products and services from new, entrepreneurial companies
NES12_W01	In my country public institutions often organize fairs and events where entrepreneurs meet and form contacts
NES12_W02	In my country the government has a policy for promoting and supporting collaboration among businesses
NES12_W03	In my country the local public authorities promote and support collaboration among businesses
NES12_W04	In my country the educational system teaches that businesses ought to collaborate
NES12_W05	In my country training courses for entrepreneurs include training in collaboration
NES12_W06	In my country business owners believe that informal agreements are more effective than contracts between businesses
NES12_W07	In my country business owners believe they gain advantages through collaboration

f. Individual Skills (personal competence)

Variable	Label (survey question)
NES12_L01	In my country, many people know how to start and manage a high-growth business
NES12_L02	In my country, many people know how to start and manage a small business
NES12_L03	In my country, many people have experience in starting a new business
NES12_L04	In my country, many people can react quickly to good opportunities for a new business
NES12_L05	In my country, many people have the ability to organize the resources required for a new business

g. Opportunities for Women Entrepreneurs

Variable	Label (survey question)
NES12_P01	In my country, there are sufficient social services available so that

	women can continue to work even after they start a family
NES12_P02	In my country, starting a new business is a socially acceptable career option for women
NES12_P03	In my country, women are encouraged to become self-employed or start a new business
NES12_P04	In my country, men and women get equally exposed to good opportunities to start a new business
NES12_P05	In my country, men and women have the same level of knowledge and skills to start a new business

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