Antecedents of Entrepreneurial Propensity: Findings from Singapore, Hong Kong and Taiwan

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ABSTRACT

The existing literature identifies a number of antecedent factors that positively influence the propensity of individuals to become entrepreneurs. Key among these is self-efficacy, knowledge of other entrepreneurs and the perception of opportunities. At the same time, current research shows that fear of failure is a major deterrent factor for entrepreneurs taking the entrepreneurial plunge. Using Shane's (2003) individual-opportunity nexus framework as an overarching theory, our study examines how these antecedents and deterrent factors influence the individual's propensity to start a new business in the three East Asian economies of Singapore, Hong Kong, and Taiwan. We also test for possible differences in the variables effects on an individual's propensity to start a new business out of necessity versus the perception of opportunity. Importantly, our findings highlight significant location differences among the variables for opportunity-driven start-ups, while no significant differences were found for necessity-driven start-ups. Finally, we discuss the relevant policy implications from our findings.

Keywords: Opportunity Start-Ups, Necessity Start-Ups, Opportunity Identification

INTRODUCTION

The central question of why some individuals and not others choose to become entrepreneurs has challenged entrepreneurship scholars throughout the history of entrepreneurship studies (Martinelli, 1994). Within the multidisciplinary nature of entrepreneurship research, various antecedents to entrepreneurial start-ups have been reported. These antecedents revolve around areas such as psychological attributes (Branstätter, 1997), organizational characteristics (Dess et al., 1999), cognition (Simon et al., 2000) and social capital (Lin, 1999). While each of these antecedents contributes to an understanding of the level of entrepreneurial activities, the fundamental idea that entrepreneurs are members of a homogeneous group that is somewhat unique is questionable. As Shaver and Scott (1991) eloquently put it: "Economic circumstances are important; social networks are important; entrepreneurial teams are important; marketing is important; finance is important; even public agency assistance is important. But none of these will, alone, create a new venture. For that we need a person, in whose mind all of the possibilities come together, who believes that innovation is possible, and who has the motivation to persist until the job is done."

In line with the importance of studying the individual entrepreneur, this paper uses the individual-opportunity nexus perspective (Shane, 2003) to examine the influence of individual-level factors on nascent entrepreneurship. Nascent entrepreneurs are defined as individuals who have taken the initial steps to found a business but have not succeeded in making the transition to new business ownership (Carter et al., 1996). Notably, we contribute to the individual-opportunity nexus perspective by showing important location effects on these individual factors. Specifically we contribute in the following ways. First, while past studies on factors influencing

entrepreneurial propensity have provided many insights, these studies have not tested for possible differences in the effects of the antecedents on opportunity and necessity nascent entrepreneurship. It is important to distinguish these two types of entrepreneurs because one out of three entrepreneurs is a necessity entrepreneur (Acs, et al., 2004; Reynolds et al., 2002). Past studies on the individual-opportunity nexus have provided a blanket conclusion on the antecedents to entrepreneurship and have assumed that similar policy prescriptions for promoting entrepreneurial start-ups apply to all entrepreneurs. Within the individual factors, we focused on fear of failure, knowledge of other entrepreneurs, and self-efficacy because individuals are only likely to exploit business opportunities if they believe that they can manage the risk of loss (Caird, 1991), have an external support and role model (Matthews and Moser, 1996), and have the confidence to see the business through (Krueger and Dickson, 1994).

Second, by focusing on nascent entrepreneurs, we more accurately capture the antecedent factors to entrepreneurial activities. Studying entrepreneurs after they have successfully started firms is sampling on the dependent variable and fails to take into account those individuals who have tried but failed to create new businesses (Davidsson and Wiklund, 2001). Third, we contribute to a better understanding of nascent entrepreneurship in East Asian economies. Past studies in this area have focused on entrepreneurial propensities in Anglo-Saxon economies, largely ignoring potential location effects on the individual factors affecting entrepreneurial propensities. We covered the three East Asian economies of Singapore, Hong Kong, and Taiwan because these economies have achieved among the highest average economic growth rates in the world over the last 30 years (Soubbotina and Sheram, 2000). Although all three economies have a predominantly ethnic Chinese population, their economic development strategies were significantly different (Wong and Ng, 2001). Singapore and Hong Kong relied heavily on

openness to trade and direct foreign investments by multinational corporations. In contrast, Taiwan developed on the strength of indigenous SMEs, especially in the manufacturing sector with an export focus (Wu and Huang, 2003). Differences also exist between Singapore and Hong Kong; while the state played a significant role in regulating and controlling the economy in Singapore, which is often said to stifle indigenous entrepreneurship (Tan and Tay, 1994), the Hong Kong government has pursued a largely laissez faire approach, which is credited with creating a more entrepreneurial culture among Hong Kong's population (Yu, 2004). The dearth of research on nascent entrepreneurship in East Asian economies provided us the motivation to examine the individual-level antecedents to entrepreneurship in an East Asian context. Furthermore, the predominantly ethnic Chinese population in Singapore, Hong Kong, and Taiwan but different economic development strategies provided a unique opportunity to examine potential location differences among the individual-level antecedents.

LITERATURE REVIEW AND HYPOTHESES

Shane and Venkataraman (2000) define the field of entrepreneurship as the recognition of opportunities and the subsequent exploitation of such opportunities by individuals. The link between individuals and opportunities, more popularly known as the individual-opportunity nexus, underscores the importance of opportunity recognition, evaluation, and exploitation by individuals (Shane, 2003). While *opportunity recognition* is the starting point of the nexus framework, the individual will still need to evaluate the business opportunity against the risk of loss (Gifford, 1992). When weighing the potential rewards against potential risks, the individual's level of *fear of failure* will play a critical role in determining the viability of the business (Stewart and Roth, 2001). To exploit an opportunity, the individual must also be able to

gain access to resources and information that facilitate the exploitation process (Aldrich, 1999). People who *know of other entrepreneurs* will benefit from the closer contacts with information and resource providers who are necessary in the exploitation process (Cromie and Birley, 1992). However, supposing that the perceived business opportunity is viable and that the necessary resources and information are available, the individual will still need to believe in his own ability to fully exploit the opportunity. Hence, the importance of *self-efficacy*, defined as the belief in one's own ability to perform a given task (Bandura, 1997). The present study examines the influence of these four individual factors on the individual's propensity to start opportunity-driven businesses.

First, *perception of opportunities*; perception of opportunities is a critical part of the entrepreneurship process (Bhave, 1994; Shane and Venkataraman, 2000; Stevenson et al., 1985; Timmons, 1999). Perception of entrepreneurial opportunities is defined as the "recognition of business opportunities for the creation of new ventures" (Christensen et al., 1989). Entrepreneurial opportunities consist of opportunities to produce raw materials, new goods, and services that can be sold for a profit (Casson 1982). Prospective entrepreneurs often perceive opportunities in the early stages of the business life cycle, prior to the creation of new ventures. Opportunity perception acts as a bridge that connects an unfulfilled market need and a solution that satisfies the need (Bhave, 1994). An individual who perceives business opportunities is said to be in a state of heightened awareness for information, a condition known as "entrepreneurial alertness" (Ray and Cardozo, 1996). During this state, individuals are highly sensitive towards changes in the business environment, be it political, economic, social or technological environment, which provide them cues of unmet needs in the market. Therefore, the ability to

perceive business opportunities is a critical pre-cursor to entrepreneurial start-ups (Gatewood et al. 1995) and a trigger event that gives birth to new organizations (Bygrave, 1994).

Second, *fear of failure;* in the midst of liability of newness (Steier, 2000) budding entrepreneurs may rethink their decisions on self-employment. Fear of failure is defined as the feeling that leaves a person discouraged in attempting an act (Applebaum et al, 1998). Given the high levels of risks and uncertainties involved in entrepreneurship activities, individuals who embark on these activities may not know what the outcome will be. Although fear of business failure is quite common with prospective entrepreneurs, there are some who cannot tolerate it (Caird, 1991). This creates a major impediment for them when they consider starting a new business. Evidence in the literature provides support that people of a Chinese culture have a high fear of failure from starting new businesses due to concerns with "losing face" (Begley and Tan, 2001). Given that the three East Asian economies of Singapore, Hong Kong, and Taiwan have predominantly ethnic Chinese populations (Wong, 1988) we would expect a negative relationship between fear of failure and entrepreneurial start-ups.

Third, *knowledge of other entrepreneurs*; knowledge of other entrepreneurs provides potential benefits to budding entrepreneurs. It acts as a form of personal connection (Bian, 1997) that helps mitigate the liabilities of newness (Steier, 2000) when individuals use their personal connections to reduce search and transaction costs as well as to gather information on business start-ups from other entrepreneurs. Indeed, personal connections are found to facilitate the exploitation of business opportunities (Davidsson and Honig, 2003; Steier, 2000), the formation of start-ups (Walker et al. 1997), and the acquiring of initial financing for new ventures (Shane, 2002).

Moreover, other entrepreneurs act as a role model for budding entrepreneurs, and firm founders are influenced by role models in their decision to become entrepreneurs (Brockhaus and Horwitz, 1986; Cooper 1986; Matthews and Moser, 1996). For example, parents who are entrepreneurs are likely to inject a positive influence on their children to start their own businesses (Matthews and Moser, 1996; Scott and Twomey, 1988). In a similar vein, knowledge of other entrepreneurs is positively related to perceived feasibility because seeing someone else succeed in entrepreneurship encourages individuals to start their own ventures (Krueger, 1993). By knowing someone who has taken the entrepreneurial plunge, potential entrepreneurs will also be in a better position to develop their entrepreneurial skills because personal relationships form a source of know-how that supplements potential entrepreneurs' training and work experience (Littunen, 2000). Contacts with other entrepreneurs help potential entrepreneurs to foresee challenges, assess plausible returns and risks, and materialize ideas into commercial actions (Johannisson, 1998). Therefore we expect a positive relationship between knowledge of other entrepreneurs and entrepreneurial start-ups.

Fourth, *self-efficacy*; Self-efficacy is a particularly relevant construct in entrepreneurship because it affects an individual's belief as to whether or not he or she is capable of successfully performing the roles and tasks of an entrepreneur (Boyd and Vizikis, 1994; De Noble et al., 1999). As Shapero (1981) notes, an "individual must be able to see himself starting and operating a company, must be able to perceive himself in the role, or he cannot even begin to think about the act".

The term self-efficacy is derived from social learning theory, and it refers to individuals' perceptions of competence and control of their "capabilities to mobilize the motivation, cognitive

resources, and courses of actions needed to exercise control over the events in their lives" (Wood and Bandura, 1989). Chen et al. (1998) defined self-efficacy in the context of entrepreneurship as the strength of a person's belief that he or she is capable of successfully performing the various roles and tasks of entrepreneurship. The authors examined the effects of self-efficacy on founders and non-founders, and concluded that business founders have higher self-efficacy than non-founders. In a similar vein, Krueger and Dickson (1994) postulated that self-efficacy is positively associated with the intrinsic interests in entrepreneurial tasks, and the willingness to persevere when faced with obstacles and setbacks. For instance, self-efficacious individuals are more likely to perceive the entrepreneurial environment positively. These individuals would view the complex and unpredictable entrepreneurial environment with more optimism and promise (Wood and Bandura, 1989). Furthermore, given the uncertain nature of entrepreneurship, self-efficacious individuals are more predisposed to view uncertainty as a challenge, and take it in their stride to deal with and make the best out of the situation (Bandura, 1997).

The underlying assumption in most entrepreneurial start-up studies is that opportunity perception is the key motivating factor that drives individuals to start their own businesses (Shane and Venkataraman, 2000). Hence, the focus of prior studies has been on opportunity-driven entrepreneurs i.e. entrepreneurs who have started a new business to exploit a perceived opportunity. Notwithstanding the importance of opportunity-driven entrepreneurship, there is a segment of entrepreneurs who go into self-employment because they have limited employment choices (Evans and Leighton, 1990; Reynolds et al. 1994). These individuals may include individuals who were fired from their jobs, or those who lack marketable skills (Saravasthy,

2004). Essentially, these are people who start businesses out of necessity i.e. necessity entrepreneurs.

We argue that for necessity entrepreneurs, the individual factors of opportunity perception, fear of failure, self-efficacy, and knowledge of other entrepreneurs will not have a significant impact on the propensity to start-up. Necessity entrepreneurs are involved in start-up activities because they have limited opportunities in the employment markets. Therefore, with or without perceived opportunities, these individuals could take the entrepreneurial plunge. Drawing on the arguments of the refugee effect, which postulates that unemployment stimulates entrepreneurship (Evans and Leighton, 1990; Reynolds et al., 1994), we expect individuals who start businesses as an alternative form of employment to be unfazed by fear of failure. Similarly, for these individuals, self-efficacy and knowledge of other entrepreneurs may not have an impact on their propensities for entrepreneurial start-ups as they have limited career choices. The above discussion leads us to the following hypotheses:

H1: Opportunity perception is significantly related to individuals starting a business to pursue an opportunity but it is not significantly related to individuals starting a business out of necessity.

H2: Fear of failure is a deterrent to individuals starting opportunity-driven start-ups but it is not a deterrent to individuals starting necessity-driven start-ups.

H3: Knowledge of other entrepreneurs is significantly related to individuals starting a business to pursue an opportunity but it is not significantly related to individuals starting a business out of necessity.

H4: Self-efficacy is significantly related to individuals starting a business to pursue an opportunity but it is not significantly related to individuals starting a business out of necessity.

Extending the arguments that have been developed on the effects of individual-level factors on the propensity to start new businesses, we concur with Shane's (2003) view that individuals are influenced by the environmental context in which they operate. In this respect, the entrepreneurial environment, which consists of dimensions such as the availability of finance, government support, quality of commercial infrastructure, and social-cultural norms, will influence the individuals' decision to start a business. According to Shane (2003), two people with comparable individual characteristics but who live in different entrepreneurial environments will make different decisions about founding a firm if one lives in an environment that favors opportunity exploitation while the other lives in an environment that hinders opportunity exploitation.

Relative to Hong Kong and Taiwan, Singapore's government policy for entrepreneurship has been systematically designed to augment the pool of entrepreneurs in the country (Ang and Hong, 2000). The Singapore government has identified entrepreneurship as one of the most significant factors in the process of growth and development of its economy (Tan, 2003). The government's strong support for entrepreneurialism is reflected in the myriad pro-entrepreneurial government assistance schemes for budding entrepreneurs and has provided the impetus for entrepreneurial start-ups in the country. Using a multi-pronged approach ranging from tax incentives, to educational reforms, to funding and networking/mentoring programs, the government has implemented a wide range of initiatives to stimulate the growth of new ventures in Singapore. The establishment of the post of a Minister-in-Charge of Entrepreneurship to coordinate entrepreneurship-related policies is also indicative of the government's strong commitment to entrepreneurship promotion. In addition, Singapore's commercial and

professional infrastructure, which is widely regarded as one of the most efficient in the world, has helped expedite the process of starting a business.

Although the geographical position of Hong Kong as a gateway city to China has given it an added advantage for its people to launch start-ups for entry into the Chinese market, we postulate that because of strong government support in Singapore as compared to Hong Kong, individuals in Singapore who possess characteristics such as perception of opportunity, knowledge of other entrepreneurs, and self-efficacy will be more likely to start businesses. In the case of Taiwan, while the government is largely supportive of self-employment, its policies and programs have been largely centered on the development of *existing* SMEs to help them upgrade and to meet the challenges of the next century (Wu and Huang, 2003). Therefore, assuming that individuals in the three economies have similar levels of opportunity perception, knowledge of other entrepreneurs, and self-efficacy, individuals living in Singapore, due to the supportive government policies there, will be more likely to start their own businesses. Similarly, Singapore's social-cultural values, which are less tolerant of risk-taking behaviors (Leong, 2004), are likely to discourage individuals who already fear the possibility of failure to start opportunity-driven businesses. Therefore, we propose the following:

H5: Opportunity perception, fear of failure, knowledge of other entrepreneurs, and self-efficacy are more significantly related to opportunity-driven start-ups in Singapore than in Hong Kong and Taiwan.

METHODOLOGY

Data source

The data for this study was drawn from the Singapore, Hong Kong and Taiwan samples of a multi-economy survey of entrepreneurial propensity among the adult population carried out by the Global Entrepreneurship Monitor (GEM) 2002 Study. The GEM study is an ongoing large-scale academic project designed to study the causes and implications of entrepreneurial behavior across countries. The main purpose of the study is to create a representative random sample of the population in each economy and to identify individuals in each sample who, at the time of the survey, owned and managed a business or were in the process of starting one. The focus of our study is on the latter i.e. individuals, commonly known as nascent entrepreneurs, who were in the process of starting a new business. The GEM surveys in Singapore, Hong Kong, and Taiwan, which were carried out using stratified random phone interviews, yielded a total sample of 5,535 individuals (1,920 for Singapore, 1,638 for Hong Kong, and 1,977 for Taiwan). The sample data for all three economies was weighted to ensure that the demographic distribution matched that of the 2002 estimates of the national population. For further details on how the weights were developed and applied, please see Reynolds et al., (2002).

As our study is concerned with the entrepreneurial propensity of individuals in three economies, the GEM database is well suited because it provides standardized data on the entrepreneurial behaviors of respondents and not on the respondents' ex-post explanations for their "hindsight bias" (Thaler, 2000). Apart from using random sampling of entrepreneurs at the early stages of venture formation, which minimizes left censoring, the GEM database has been established as reliable and valid for cross-economy comparisons on individual entrepreneurial

propensity (Reynolds et al., 2005). This database has been used in numerous studies on entrepreneurial propensities including those by Acs and Varga (2005), Sternberg and Wennekers (2005), Wennekers et al., (2005), and Koellinger et al., (2007).

Measures

Dependent Variables

The dependent variables comprise opportunity-based start-up and necessity-based start-up. Each respondent was asked a series of questions to identify those individuals who were involved in the start-up process because they had perceived an opportunity i.e. opportunity-based start-up or because they had no other career choice i.e. necessity-based start-up. To be considered an opportunity-based start-up, the respondent had to answer that: (1) they were currently trying, alone or with others, to start a new business, (2) over the past 12 months the respondent had done something tangible to help start his new business – such as looking for equipment or a location, organizing a start-up team, working on a business plan, beginning to save money, or any other activity that would help launch a business, they had voluntarily participated in the start-up process to pursue an opportunity, (3) the respondent would personally own all or part of the new business, and (4) the business had not paid any full salaries for more than three months (the three months criteria was first adopted by the Panel Study of Entrepreneurial Dynamics (PSED) as an indicator of the transition from nascent firm to new firm (Gartner et al., 2004)).

Opportunity-based start-up is a dichotomous variable, taking value 1 if the respondent indicated that he/she has voluntarily participated in the start-up process to pursue an opportunity, and 0 if otherwise. Likewise, necessity-based start-up is represented by value 1 if the respondent

indicated that he/she has participated in the start-up process as a last resort, when other options for work or participation in the economy were absent or considered unsatisfactory, and 0 if otherwise.

Explanatory Variables

The predictor variables are self-efficacy, perception of opportunities, knowledge of entrepreneurs, and fear of failure. Following studies using the GEM database, all the predictor variables were ascertained by "yes-no" statements, and they are coded 1 if the respondent answered "yes", and 0 if "no". Self-efficacy was measured with the question: "You have the knowledge, skill and experience required to start a new business"; perception of opportunity was measured with the question: "In the next 6 months there will be good opportunities for starting a business in an area where you live"; prior knowledge was measured with the question: "You know someone personally who started a business in the past two years"; and fear of failure with the question: "Fear of failure would prevent you from starting a business".

The need to avoid sample selection bias requires a large random sample of the adult population since only a small proportion of the population is involved in entrepreneurial activities. Thus, it is not unusual for large, cross-economy survey methodologies to use single item measures (Delmar and Shane, 2003). Single item measures are also useful in cross-national studies to mitigate the problems of potential biases in responses. People from different social and cultural backgrounds may interpret and respond differently to the components of a composite measure (Delmar and Shane, 2003). Given the large, random, and cross-cultural characteristics of our sample, it was necessary to use single dichotomous measures.

Control Variables

Age: We controlled for the respondent's age because of its influence on career decisions. Age has an inverted U-shaped relationship with the probability of entering self-employment (Bates, 1995; Alba-Ramirez, 1994). Initially, age increases the likelihood that people will start their own businesses because age incorporates the positive effect of experience, but as people age, their opportunity costs rise along with higher incomes, which decreases the likelihood of self-employment.

Gender: Studies on demographic factors such as gender (Matthews and Moser, 1996) show that males are more likely than females to be self-employed. 'Gender' is represented by binary variables, with male coded 0, and female coded 1.

Education attainment: The individuals' level of education attainment contributes to their likelihood of being self-employed (Dolinsky et al., 1993). We classified education attainment into 3 levels, below secondary degree, secondary degree, and post secondary degree.

Economy dummies: Dummy variables were used to control for the economies in this study, i.e., Singapore, Hong Kong and Taiwan.

Economy-level factors: Economy-level effects were controlled with five variables: cultural and social norms, commercial infrastructure, entrepreneurial financial support, government support, and administrative ease of starting businesses. The first four variables were measured by asking the respondent's perceptions on a series of statements. The responses for these statements were measured on a five-point scale from '1' (completely false) to '5' (completely true). For all four

variables, higher scores reflect an agreement that the cultural-social norms are supportive of entrepreneurship and that the economy's commercial infrastructure, entrepreneurial financial support, government support are effective in promoting entrepreneurship. The fifth variable, administrative ease of starting businesses is an index obtained from the 2002 Global Competitiveness Report (GCR). This index measures the relative ease of starting businesses in each economy.

Analysis of Method

We use rare event hierarchical logistic regression analyses to test the hypotheses because the dependent variables, opportunity start-ups and necessity start-ups are skewed with many more "zeros" (non-start-ups activity) than "ones" (start-ups activity). The numerical values for "skewness" were 3.69 for opportunity start-up and 3.94 for necessity start-up. Rare event logistic regression corrects for skewness in the dependent variable (King and Zeng, 2001).

In addition to testing the hypotheses in our study, we were also interested to provide additional evidence on the influence of economy-level factors on the individual's propensity to start up a business. We used a hierarchical linear model (HLM), which is used for analyzing data in a nested structure (Nezlek and Zyzniewski, 1998). In our study, the individuals are nested within three different economies. HLM allows us to show the extent to which group level variances i.e. economy-level factors explain variation in the individual level parameters i.e. propensity to start-up.

RESULTS

Table 1 shows the correlations among the variables and provides several insights. First the significant positive correlation between opportunity start-up and post secondary education suggests that individuals educated to a higher level are more likely to pursue opportunity-driven start-ups than those educated to a lower level. Second, there are significant correlations between opportunity start-up and the explanatory variables, but there are no significant correlations between necessity start-ups and the explanatory variables. Third, the significant negative correlation between fear of failure and opportunity start-ups shows that fear of failure is related to a lower propensity to exploit business opportunities. Fourth, the significant correlations between the Singapore dummy variable and economy-level factors suggest that while Singapore's social-cultural norms are less supportive of entrepreneurship, its commercial infrastructure, financial support, government support, and administrative requirements are favorable for entrepreneurship. The correlations also suggest that multi-collinearity is unlikely to affect the findings of the study since the correlations among the variables are all below 0.60 (Kennedy, 1992) and none of the VIFs for the models is greater than two, which is below the guideline of 10 by Chatterjee and Price (1991).

Insert Table 1 about here

Table 2 presents the findings from the rare events logistic regression examining the propensity of opportunity start-ups versus necessity start-ups. As observed in Model 1, which consists of only control variables, age squared (b = -0.881; $p < 0.01$) is significantly related to the propensity for opportunity start-ups, suggesting that age has an inverted U-shaped relationship with opportunity start-ups. Hypotheses 1 to 4 were tested in Models 2 (dependent variable:

opportunity start-ups) and 5 (dependent variable: necessity start-ups), where the predictor variables, self-efficacy, fear of failure, knowing other entrepreneurs, and perception of opportunities were incorporated in the regression analyses. The results in Models 2 and 5 support hypothesis 1, that perception of opportunity is significantly related to individuals starting a business to pursue an opportunity, but it is not significantly related to individuals starting a business out of necessity. Similarly, the results support hypothesis 2, that fear of failure is a significant deterrent for individuals starting a business to pursue an opportunity, but it is not significantly related to individuals starting a business out of necessity. In a similar vein, the comparisons between the results in Model 2 and Model 5 provide support for hypothesis 3, that knowledge of other entrepreneurs is significantly related to individuals starting a business to pursue an opportunity, but it is not significantly related to individuals starting a business out of necessity. Models 2 and 5 also support hypothesis 4, that self-efficacy is significantly related to individuals starting a business to pursue an opportunity, but it is not significantly related to individuals starting a business out of necessity. The pseudo R^2 increases to about 20% for Model 2 over Model 1 and the results for the control variables are consistent between Models 1 and 2. While Model 2 explains about 20% of the variance in the dependent variable i.e. opportunity start-ups, Model 5 explains about 12% of the variance in the dependent variable i.e. necessity start-ups.

Insert Table 2 about here

Hypothesis 5 was tested in Models 3 and 6, where the interaction effects between the predictor variables and economy dummies were included in the regressions. We found that relative to Hong Kong and Taiwan, fear of failure (b = -1.092) has a statistically adverse impact on

opportunity start-ups in Singapore ($p< 0.01$). Additionally, self-efficacy (b = 0.801) and knowledge of other entrepreneurs (b = 0.822) is positively related to opportunity start-ups only in Singapore, but not in Hong Kong and Taiwan. However, perception of opportunity is statistically non-significant in Singapore, but has a positive effect on opportunity-based start-ups in Hong Kong (b = 0.909; $p< 0.05$). Given that not all the predictors are significant for opportunity start-ups in Singapore, hypothesis 5 is partially supported.

Model 3 shows that post secondary education (b = 0.716; $p< 0.05$) has a significant positive effect on opportunity-based start-ups, and that males are more likely than females to start businesses to pursue an opportunity. These factors are, however, not important for necessity-driven start-ups. The control factors, main effects, and interaction effects in Model 3 explains a significant proportion of the variance (about 25%) in the dependent variable i.e. opportunity start-ups. The odds ratio in Model 3 indicates that an individual high in self-efficacy as compared to an individual low in self-efficacy is almost two times more likely to start a business to pursue an opportunity. The odds ratio in Model 3 also indicates that an individual who perceives opportunities as compared to an individual who does not perceive opportunities is almost three times more likely to start a business to pursue an opportunity. For those who know of other entrepreneurs and those who fear the possibility of failure, they are 1.5 times more likely and 1.5 times less likely respectively to be involved in an opportunity-driven start-up. On the contrary, under these influences, the probability of an individual engaging in the start-up process because of necessity is lower. The results also indicate that among the explanatory variables, self-efficacy has the largest impact on opportunity start-ups (b = 1.926) followed by perception of business opportunities (b = 1.788), and knowledge of other entrepreneurs (b = 0.925).

To test the robustness of our results, we employed hierarchical linear model (HLM) regressions (Table 3). Consistent with the results of the rare events logistic regressions, the results of HLM regressions provide support for hypotheses 1 to 4. All the predictor variables are statistically significant for opportunity start-ups, but not for necessity start-ups. These individual-level factors account for 27% and 11% of the variations in the propensity for opportunity start-ups and necessity start-ups respectively. We included five economy-level variables in the HLM regressions to examine the effects between the individual-level variables and economy dummies. All five economy-level variables i.e. cultural and social norms, administrative ease of starting businesses, commercial infrastructure, entrepreneurial financial support, and government support programs had a significant impact on opportunity-based start-ups, but only administrative ease of starting businesses was significantly related to necessity start-ups. Positive interaction effects between the individual-level predictors such as self-efficacy, fear of failure, knowledge of other entrepreneurs and economy level factors such as government support, administrative ease, and cultural-social norms were observed for opportunity start-ups. Compared to individual-level variables, the country-level variables explain a higher proportion of the variance in the dependent variable i.e. 51% and 23% for opportunity start-ups and necessity start-ups respectively.

Insert Table 3 about here

DISCUSSION

The dearth of research on nascent entrepreneurship in East Asian economies provided us the motivation to examine the individual-level antecedents to entrepreneurship in Singapore, Hong Kong and Taiwan as well as the potential locational differences among the antecedents. In support of prior research, we found that perception of opportunities, fear of failure, knowledge of

other entrepreneurs, and self-efficacy are significantly related to an individual's propensity to start an opportunity-driven business. We advanced the individual-nexus perspective literature however, in finding that these individual factors matter to opportunity entrepreneurs but not to necessity entrepreneurs. Moreover, there exist locational differences among the individual-level antecedents to start-up propensity.

Notably, while prior studies on factors influencing entrepreneurial propensity have provided many insights, these studies have not tested for possible differences in the effects of the antecedents on opportunity and necessity nascent entrepreneurship. Overall, the results indicated that individuals are less affected by internal factors if they are starting a business out of necessity. Necessity entrepreneurs are individuals who have low opportunity costs (Amit and Schoemaker, 1993) and who face obstacles in the labor market (Timmons, 1999). These individuals start their businesses to survive, and, therefore, they may not fear the possibility of failure nor are they influenced by factors such as self-efficacy, perception of opportunities, and knowledge of other entrepreneurs. In contrast, for individuals who start a business to pursue an opportunity, this process will be influenced by their level of fear, their knowledge of other entrepreneurs, and their confidence to see the business through.

Importantly, we also found that fear of failure to be more important in Singapore than in Hong Kong or Taiwan. This could be because the cultural norm in Singapore has largely been unsupportive of entrepreneurial risk-taking (Leong, 2004). Traditionally, people in Singapore have been comfortable with stable and well-paying jobs in the MNCs and hence, have had little impetus for entrepreneurial pursuits (Leong, 2004). In contrast to Singapore, the entrepreneurial spirit has been the basis for Hong Kong's phenomenal economic growth and success (Wong,

1988). Many of the early Hong Kong emigrant entrepreneurs fled from economic hardships in China and built their fortunes under the laissez-faire economic environment established by the British colonial government (Chua, 2003). In the case of Taiwan, self-employment is a popular option and more than one fifth of the labor force is self-employed (Lin, 2001; Yu and Su, 2004). Unlike its peers, Hong Kong and Singapore, Taiwan has neither transformed into a financial centre nor a home to large MNCs (Wu and Huang, 2003).

The findings also provide support for the observation that Singapore nationals rely on the support and role modeling of others to start their own businesses. In a similar vein, due to their inherent risk aversion and lack of entrepreneurial drive, self confidence in starting one's own business becomes a critical factor in influencing the individual to start a new business in Singapore. Besides, intangible factors such as self-efficacy and knowledge of other entrepreneurs are good complements to the strong 'hardware' support in Singapore such as its government programs, entrepreneurial financing, administrative ease of starting businesses, and its commercial infrastructure and facilities. However, compared to Hong Kong and Taiwan, opportunity perception is less important in Singapore. This can be attributed to the presence of large and prominent government-linked companies (GLCs) that make it difficult for start-ups to penetrate existing and new markets (Wong et al., 2002). On the contrary, Hong Kong's close proximity to Mainland China provides more avenues for its entrepreneurs or budding entrepreneurs to exploit perceived opportunities. Hence, perception of opportunities is more likely to translate to actual business start-ups in Hong Kong. However, we acknowledge that the Asian economic crisis in the late 1990s, where Hong Kong was worse hit than other countries, could render individual factors such as self-efficacy and knowledge of other entrepreneurs ineffective in influencing individuals' propensity to start-up in Hong Kong.

Although we could not rule out the alternate hypotheses that the lack of entrepreneurial start-up propensity in Hong Kong could be due to the Asian crisis, Singapore and Taiwan were not spared during this crisis. In Singapore, the currency declined 18% over a six month period in 1998 (Ngiam, 2000), and the stock and property markets were also badly hit. The Straits Times Index (the major stock index in Singapore) dropped to a 10-year low in September 1998, a decline of some 60% over a fourteen-month period (Ngiam, 2000). The property market price index plunged about 40% over a 1-year period at the end of 1998 (Ngiam, 2000). On the other hand, Taiwan was affected by the crisis through a huge decline in its exports to the region. Although the effects of the Asian crisis in Taiwan were not as drastic as in Hong Kong and Singapore, it was of a substantial magnitude. More importantly, these factors further reinforce the need to examine the individual-opportunity nexus framework in conjunction with location related factors.

Additionally, our findings are consistent with prior results of male dominance in entrepreneurship. Past studies have documented the significant gender gap in entrepreneurial pursuits, and have consistently emphasized the importance of supporting more female entrepreneurs. The Diana Project, which was established in 1999 and funded by Ewing Marion Kauffman Foundation to raise awareness and expectations of female entrepreneurs, specializes in research on women entrepreneurship. Managed by a team of women academics, the Diana Project has produced several books, reports, journal articles, and presentations on women entrepreneurs.

CONCLUSION

Entrepreneurship scholars have strived to develop an understanding of the individual-level antecedents of entrepreneurial propensity. The significant impact of self-efficacy on opportunity start-ups suggests that this antecedent should be further stimulated to encourage higher levels of entrepreneurial start-ups. Prior literature shows that self-efficacy can be developed by increasing an individual's level of knowledge and skills (Sweeney, 1985). One way to achieve this is to expose employees to commercial experience and customer contacts (Gompers et al. 2003). In addition entrepreneurship education (Gatewood et al. 1995) and practical teaching methods in business which expose individuals to real-life entrepreneurship situations such as the Junior Achievement in the US, and Young Enterprise in the UK can be adapted.

The findings of the adverse impact of fear of failure on opportunity start-ups in Singapore suggests that to promote entrepreneurship in the country, it is important not only to promote the antecedents to entrepreneurship but also to reduce deterrents such as the fear of failure. As compared to Hong Kong and Taiwan, Singapore has more stringent bankruptcy laws, where the penalty imposed on bankruptcy is severe, and failed entrepreneurs are often blacklisted. To cultivate the entrepreneurial spirit, the Singapore government has recently relaxed its bankruptcy law to ease fears on business failure. However, these policy changes are likely to take time to make significant, sustained impact, as cultural values towards entrepreneurship cannot be changed overnight.

Knowledge of other entrepreneurs is a strong predictor for opportunity start-ups in Singapore but is not significant in Hong Kong and Taiwan. At least in the case of Hong Kong, a study by Chow and Ng (2004) showed low social dependence among Hong Kong subjects. The authors

attributed the low social dependence on a number of factors such as the growing individualistic work environment and the frequency of job change that prohibits people from building bonds among colleagues at the workplace. Some commentators have observed that Hong Kong is "suffering from a long-term depletion of its stock of social capital", where an estimated 75% of its people had no membership of any groups (Lau, 2000). Future studies can examine why knowledge of entrepreneurs is related to entrepreneurship in some locations but not in others. To the extent that knowledge of other entrepreneurs is a critical antecedent to opportunity start-ups in some locations, policy-makers can promote networking events between prospective and successful entrepreneurs. Existing entrepreneurs, particularly established entrepreneurs could also volunteer time to mentor aspiring entrepreneurs. Studies have shown that student internships schemes with high-growth start-ups are effective means of improving webs of social relationships that can be useful for aspiring entrepreneurs when they start their own businesses (Bottomley et al. 2002).

Who starts new businesses is a critical question (Romanelli and Schoonhoven, 2001) because new businesses form the basis for economic growth by replacing businesses that have failed, by creating jobs and by converting technologies into products and services (Shane, 2000). While the findings in this study hold clear implications for policy prescriptions, future research may benefit from the use of more refined, multi-item measures to replicate the findings. Additionally, future studies that examine individuals' propensity to start-up can employ qualitative methods to better understand the individual's thought processes during the opportunity recognition, evaluation, and exploitation stages. For example qualitative studies could go in-depth into the processes through which self-efficacy, knowledge of other entrepreneurs, and fear of failure influence individuals' decisions at different phases of the start-up process. More importantly, given the location effects

on the individual factors affecting entrepreneurial propensities, future studies can examine other location factors such as the "urge to control", "familism", and "OEM and commodity chain structures", and their influences on the propensity to start-up.

We showed that individual factors of self-efficacy, perception of opportunities, prior knowledge of other entrepreneurs, and fear of failure influence the individual's propensity to start opportunity-driven businesses. Moreover, we studied these factors in three fast growing East-Asian economies of Singapore, Hong Kong, and Taiwan – economies where unfortunately there have been limited studies of individual factors affecting the level of entrepreneurial activities. Our paper contributes to the individual-nexus perspective in three ways. First, we show that location factors moderate the effects of individual factors on the propensity to start-up. In particular, given the strong government support in Singapore, the impact of individual factors on the propensity to start opportunity-driven start-ups is stronger in Singapore than in Hong Kong and Taiwan. Thus future studies should examine individual factors in conjunction with environmental factors. Second, individual factors on the propensity to start-up influence opportunity-driven start-ups but may not have a significant influence on necessity-driven start-ups. To our knowledge, this is the first study to show differing effects of individual factors on opportunity-driven and necessity-driven entrepreneurship. Third, the study uses a large random sample that does not suffer from retrospective biases and the sampling on the dependent variable. Of the influence of individual factors on the propensity to start-up, this study found that self-efficacy has the largest impact, followed by opportunity perception, knowledge of other entrepreneurs, and fear of failure.

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Table 1. Std. Deviation, Mean, and Correlation among Variables (Singapore, Hong Kong, and Taiwan) N = 5,535

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Opportuniy start-up	1.00																		
2. Necessity start-up	-0.08	1.00																	
3. Age	0.05	0.06	1.00																
4. Gender (1=Female)	-0.14*	-0.13*	0.07	1.00															
5. Below secondary education	-0.16*	0.05	0.04	0.05	1.00														
6. Secondary education	-0.10	0.14*	0.05	0.03	0.01	1.00													
7. Post secondary education	0.11*	-0.12	0.06	0.01	0.01	0.02	1.00												
8. Hong Kong	0.02	0.04	0.01	0.03	0.04	0.04	0.06	1.00											
9. Singapore	0.04	0.02	0.02	0.06	0.05	0.03	0.07	0.02	1.00										
10. Taiwan	0.05	0.05	0.02	0.06	0.03	0.06	0.04	0.03	0.06	1.00									
11. Self-efficacy	0.18*	0.06	0.03	0.07	0.02	0.05	0.09	0.03	0.04	0.05	1.00								
12. Perception of opportunities	0.15*	0.02	0.04	0.04	0.03	0.04	0.07	0.05	0.07	0.06	0.07	1.00							
13. Knowing other entrepreneurs	0.12*	0.08	0.05	0.05	0.04	0.06	0.09	0.04	0.01	0.04	0.06	0.04	1.00						
14. Fear of failure	-0.14*	0.08	0.07	0.05	0.01	0.02	0.05	0.06	0.02	0.05	0.07	0.08	0.02	1.00					
15. Cultural & social norms	0.06	0.06	0.02	0.02	0.03	0.01	0.01	0.13*	-0.16*	0.12*	0.05	0.04	0.07	0.04	1.00				
16. Administrative ease	0.03	0.03	0.03	0.04	0.04	0.04	0.02	0.09	0.11*	0.07	0.04	0.05	0.06	0.03	0.03	1.00			
17. Commercial infrastructure	0.02	0.01	0.05	0.05	0.01	0.05	0.01	0.11*	0.15*	0.08	0.07	0.06	0.02	0.06	0.03	0.04	1.00		
18. Entrepreneurial financial support	0.05	0.02	0.03	0.06	0.03	0.03	0.02	0.08	0.14**	0.07	0.08	0.06	0.03	0.07	0.02	0.03	0.02	1.00	
19. Government support programmes	0.09	0.04	0.02	0.06	0.01	0.05	0.03	0.07	0.17**	0.07	0.06	0.02	0.05	0.06	0.05	0.07	0.04	0.05	1.00
Mean	0.034	0.008	33.109	0.495	0.411	0.269	0.320	0.300	0.350	0.350	0.270	0.180	0.270	0.360	3.333	5.867	3.720	3.292	3.467
Std. Deviation	0.182	0.091	0.876	0.488	0.321	0.298	0.312	0.460	0.453	0.480	0.210	0.271	0.231	0.299	0.439	0.650	0.453	0.593	0.439

* Sig. at 5% ** Sig. at 1%

Table 2. Rare Events Logistic Regression Examining the Propensity of Opportunity Start-Ups vs. Necessity Start-Ups

A) Opportunity Start-Ups (N = 5,480) Opportunity start-ups vs. Non start-ups					**B) Necessity Start-Ups (N = 5352) Necessity start-ups vs. Non start-ups**			
Variables	Model 1	Model 2	Model 3		Model 4	Model 5	Model 6	
	B	B	B	Odds Ratios	B	B	B	Odds Ratios
Controls								
Constant	-4.333**	-4.631**	-4.498**	0.008	-3.210**	-3.002*	-3.221*	0.005
Age	0.147*	0.177*	0.180*	0.085	0.133	0.103	0.114	1.132
Age Squared	-0.881**	-0.731**	-0.809**	1.537	-0.129	-0.159*	-0.153*	1.899
Gender (Female = 1)	-0.637	-0.622	-0.756*	0.906	-0.552	-0.444	-0.393	0.667
Secondary Education dummy	0.124	0.939	0.948	0.429	0.199	0.220	0.225	0.836
Post Secondary dummy	0.691	0.721	0.716*	1.605	0.414	0.439	0.511	0.710
Spore country dummy	0.285	0.265	0.245	0.564	0.149	0.142	0.101	0.428
HK country dummy	0.291	0.311	0.319	0.403	0.203	0.231	0.228	0.457
Main effects								
Self-efficacy (Yes=1)		1.904**	1.926**	2.216		0.634	0.674	1.679
Fear of failure (Yes=1)		-0.831*	-0.853*	1.596		-0.727	-0.781	0.526
Know an entrepreneur (Yes=1)		0.983*	0.925*	1.537		0.652	0.666	0.744
Perception of opportunities (Yes=1)		1.735*	1.788*	2.987		0.882	0.898	1.616
Interaction effects								
Singapore X self-efficacy			0.801*	1.535			0.204	0.021
Singapore X fear of failure			-1.092**	1.898			0.659	0.036
Singapore X know an entrepreneur			0.822*	0.643			0.511	0.033
Singapore X opportunities			0.468	0.620			0.596	0.029
Hong Kong X self-efficacy			0.654	0.315			0.178	0.018
Hong Kong X opportunities			0.909*	0.705			0.578	0.020
Hong Kong X know an entrepreneur			0.669	0.226			0.337	0.028
Hong Kong X fear of failure			0.282	0.105			0.341	0.044
Chi-square	122.667	264.295	420.217		110.232	244.394	389.234	
Chi-square change		141.628**	155.922**			134.162**	144.840**	
Nagelkere R^2	0.149	0.201	0.245		0.070	0.121	0.143	

*Sig at 5%; **Sig at 1%

Table 3. HLM Regression Results Examining the Propensity to Start-Up

Variable	**Opportunity start-ups vs. Non-Entrepreneurs** Estimate (SE)	**Necessity Start-ups vs. Non-Entrepreneurs** Estimate (SE)
Intercept	10.33 (0.65)	8.96 (0.72)
Controls		
Age	0.32(0.06)	0.39(0.13)
Age squared	0.69**(0.29)	0.64*(0.34)
Gender (Female = 1)	-0.44(0.33)	-0.39(0.19)
Secondary	0.08(0.99)	0.11(0.77)
Post secondary	0.59(0.32)	-0.75*(0.29)
Individual variables		
Self-efficacy	3.44**(0.53)	0.68(0.39)
Perception of opportunities	2.83*(0.46)	1.02(0.33)
Know an entrepreneur	2.33*(0.89)	1.07(0.73)
Fear of failure	-1.92*(0.45)	-0.74(0.39)
Country-level variables		
Cultural and social norms	1.38*(0.42)	0.57(0.39)
Administrative ease of starting businesses	0.64*(0.33)	0.89*(0.18)
Commercial infrastructure	0.84*(0.48)	0.31(0.06)
Entrepreneurial financial support	0.59*(0.31)	0.27(0.12)
Government support programmes	0.84*(0.83)	0.33(0.04)
Self-efficacy X Government support	2.61*(0.04)	0.43(0.07)
Self-efficacy X Administrative ease	1.43*(0.01)	0.64(0.05)
Fear of failure X Culture and social norms	-1.85*(0.25)	0.83(0.11)
Know an entrepreneur X Government support	1.38*(0.49)	0.69(0.18)
Individual explained variation	0.27	0.11
Country explained variation	0.51	0.23

*Sig at 5%; **Sig at 1%