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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 are self-efficacy, prior knowledge of other entrepreneurs and perception of opportunities. At the same time, policy makers commonly identify fear of failure as a major deterrent factor for entrepreneurs taking the entrepreneurial plunge.

This paper examines the relative impacts of these antecedents and deterrent factor on entrepreneurial propensity, defined as the likelihood of starting one's own business in the three East Asian newly-industrialised economies (NIEs) of Singapore, Hong Kong, and Taiwan. We also test for possible differences in the variables effects on opportunity vs. necessity entrepreneurial propensities. Our findings highlight significant location differences among the variables in the case of overall, opportunity and necessity entrepreneurship. Finally, we discuss the relevant policy implications from our findings.

Keywords: Entrepreneurial Propensity, Self-Efficacy, Perception of Opportunities, Prior Knowledge of other Entrepreneurs, Fear of Failure, East Asia

INTRODUCTION

While the existing entrepreneurship literature has identified various antecedent factors that influence the propensity of individuals to become entrepreneurs, there has been relatively few empirical studies covering the three East Asian newly-industrialised economies (NIEs) of Singapore, Hong Kong, and Taiwan, which have achieved among the highest average economic growth rate in the world over the last 30 years. Although all three economies have predominantly ethnic Chinese population, their economic development strategies have been significantly different (Wong and Ng, 2001).

While both Singapore and Hong Kong relied heavily on openness to trades and foreign investments in general as well as DFIs by large multinational corporations, Taiwan has developed on the strength of indigenous SMEs, especially in the manufacturing sector with an exporting focus. 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, 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. [1]

Such popular impressions notwithstanding, data from Global Entrepreneurship Monitor (GEM) 2002[2] show that Singapore actually registered the highest total entrepreneurial activity (TEA) propensity (5.9%), followed by Taiwan (4.3%), with Hong Kong being the lowest (3.4%). [3] The discordance between popular impressions and GEM 2002 findings provides a prelude for a more

detailed analysis. As a starting point, our paper examines the extent to which levels of entrepreneurial activities in the three NIEs can be explained by established antecedent factors in the extant entrepreneurship literature. Based on data drawn from the GEM 2002 adult population surveys in Singapore, Hong Kong, and Taiwan, we examine the effects of the following antecedent/deterrent factors: (i) self-efficacy; (ii) perception of opportunities; (iii) prior knowledge of other entrepreneurs; and iv) fear of failure on entrepreneurial propensity.

LITERATURE REVIEW AND HYPOTHESES

Self-Efficacy

Self-efficacy as a construct is conceived by Bandura (1986) as one's judgment of ability to execute an action, and is therefore a largely perceived construct. This construct is established as a reliable predictor of a wide variety of goal-directed behaviours. 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. Their measure of self-efficacy comprises of dimensions such as marketing, innovation, management, risk-taking, and financial control. The authors reported that self-efficacy is positively related to one's intention in setting up a business. They also provided support that entrepreneurship students have higher self-efficacy in marketing, management, and financial control than management and psychology students. In a similar vein, the authors examined the effects of self-efficacy and locus of control on founders and non-founders, and concluded that business founders have higher self-efficacy than non-founders.

Krueger and Dickson (1994) postulated that high levels of self-efficacy are associated with strategic risk taking while Krueger et al. (2000) argued that self-efficacy is a critical antecedent of entrepreneurial intent. Individuals with high self-efficacy have more intrinsic interests in entrepreneurial tasks, and are more willing to make an effort and show persistence when faced with obstacles and setbacks.

De Noble et al. (1999) developed a measure of self-efficacy that specifically relates to entrepreneurial tasks. They identified six dimensions of entrepreneurial skills, which included risk and uncertainty management, innovation and product development, interpersonal and networking management, opportunity recognition, procurement and allocation of critical resources, and development and maintenance of an innovative work environment. In another study, Jung et al. (2001) used De Noble et al.'s (1999) measures of self-efficacy on two groups of respondents from U.S. and Korea to examine whether individuals' assessment of their entrepreneurial skills is associated with their entrepreneurial intentions. The authors found support for their hypothesis that entrepreneurial self-efficacy is positively associated with entrepreneurial intentions in both individualist (US) and collectivist (Korea) cultures.

Neupert et al. (2004) extended DeNoble et al.'s (1999) six dimensions to an international (non-U.S.) sample of aspiring entrepreneurs participating in a business plan competition. Their findings emphasised significant correlation between self-efficacy and intention to start one's own business.

Therefore, we hypothesise that:

H1: There is a positive relationship between self-efficacy and business founding in Singapore, Hong Kong and Taiwan.

Perception of Opportunities

There is a growing consensus among entrepreneurship scholars that perception of opportunities is a critical part of the entrepreneurship process (Bhave, 1994; Shane & 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). Christensen et al.'s (1989) definition of opportunity perception chimes with De Koning & Muzyka's (1999) description, in which they defined opportunity perception as "the specific eureka experiences, when an idea crystallises suddenly".

Prospective entrepreneurs often perceive opportunities in the early stages of the business life cycle, prior to the creation of new ventures. The act of opportunity perception itself is seen as a positive displacement, which "dislodges an individual from an inertia-laden state of being", a condition necessary to precipitate a change in life-path (Shapero, 1978). Apart from negative displacements such as work dissatisfaction, forced migration, and redundancy, positive displacement such as opportunity perception are examples of "triggering events" that give birth to new organisations (Bygrave, 1994).

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 & 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. One of the factors that influence opportunity perception is prior knowledge (Shane, 1999). Individuals with prior knowledge of markets, prior knowledge of ways to serve markets, and prior knowledge of customer problems have a greater advantage compared to others when deciding to start a new business. Therefore, the ability to perceive business opportunities is a critical pre-cursor to entrepreneurship (Gatewood et al. 1995).

The above consideration leads us to the following hypothesis:

H2: There is a positive relationship between perception of opportunities and business founding in Singapore, Hong Kong and Taiwan.

Prior Knowledge of Other Entrepreneurs

Knowledge of other entrepreneurs provides many potential benefits to budding entrepreneurs. It acts as a form of personal connections (Bian, 1997), a point of reference (Steier, 2000), and a source of role model (Matthews & Moser, 1996) for the entrepreneurs. Given the constraint of resources, prior knowledge of other entrepreneurs helps mitigate the "liabilities of newness" (Steier, 2000) when entrepreneurs use their personal connections to reduce search and

transaction costs as well as to gather information pertaining to business start-ups. 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).

Furthermore, by knowing someone who has taken the entrepreneurial plunge, potential entrepreneurs are in a better position to develop their entrepreneurial skills. The personal relationships form an independent field of know-how that could supplement potential entrepreneurs' training and work experience (Littunen, 2000), and such linkages give nascent and new business access to various relevant segments of the start-up environment. As learning and socializing are two sides of a coin in business (Johannisson, 1998), prior contacts with other entrepreneurs facilitate the development of entrepreneurial skills. Potential entrepreneurs will be more capable to foresee opportunities and challenges, to assess plausible returns and risks, and to materialise ideas into commercial actions.

In addition to the instrumental function of personal connections, knowledge of other entrepreneurs acts as a source of role models and influences entrepreneurial intentions indirectly through perception. Prior studies supported the notion that firm founders were influenced by role models in their decision to become entrepreneurs (Brockhaus and Horwitz, 1986; Cooper 1986). The positive influence of role models on entrepreneurial propensity is attributed to parental influence that lead to a preference for self-employment (Matthews & Moser, 1996; Scott & Twomey, 1988). In a similar vein, Krueger (1993) argued that perceived feasibility is positively

associated with prior knowledge of other entrepreneurs as seeing someone else succeed in entrepreneurship encourages individuals to start new ventures.

Having entrepreneurial role models is seen not only as an important motivator, but also as an intangible structural feature for entrepreneurship. Venkataraman (2004) suggested that role models are one of the many intangibles that provide sufficient conditions for entrepreneurship to thrive in a locality. The presence of other entrepreneurs is one aspect of the business environment that affects new venture (Cooper, 1970). In a cross-national study, researchers reported that exemplary entrepreneurial role models create favourable climate for entrepreneurial career options (Kantis, Ishida and Komori, 2002).

Collectively, there is sufficient evidence in the extant literature to point to the following hypothesis:

H3: There is a positive relationship between prior knowledge of other entrepreneurs and business founding in Singapore, Hong Kong and Taiwan.

Fear of Failure

In the midst of constantly changing environments, increasing levels of competition among existing firms, and escalating altitude of business failures and liquidations, it is natural for budding entrepreneurs to take a step back and rethink their decisions on self-employments. In

turbulent times, it is highly likely that these people will be affected by the fear of business failure (Smith, 1999).

Fear of failure per se 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. This creates a major impediment for them when they consider starting a new business. Popular impression provides additional support that the Chinese culture induces a higher fear of failure from starting new businesses due to concerns with "losing face" (Begley and Tan, 2001). Given that the three East Asian NIEs of Singapore, Hong Kong, and Taiwan have predominantly ethnic Chinese population (Wong, 1988), we propose the following hypothesis.

H4: There is a negative relationship between fear of failure and business founding in Singapore, Hong Kong and Taiwan.

METHODOLOGY

Data source

The data were drawn from the Singapore, Hong Kong and Taiwan samples of a multi-country survey of adult population carried out by the Global Entrepreneurship Monitor (GEM) 2002 Study. [4] The total population of the three economies – Singapore, Hong Kong and Taiwan in

GEM 2002 was about 34.3 million, and approximately 66.6 percent (22.85 million) were working-age adults (18-64 years old). Data were collected for each participating economy from three basic sources. These research sources are Extensive Adult Population Survey, Key Informants Survey, and Collection of Secondary National Socio-Economic Data. [5] In this study, we utilise only the responses of the working-age individuals (18 to 64 years old) from the Adult Population Survey.

The Adult Population Survey, which was carried out by stratified random phone interviews was used to estimate the entrepreneurial participation in the economy concerned as well as to capture various attitudes of the population towards entrepreneurship. The sample size of working-age adults (18-64 years old) from the three economies – Singapore, Hong Kong and Taiwan was 1,920, 1,638 and 1,977 respectively. [6] The sample data were weighted to ensure that the demographic distribution matched that of the 2002 estimates of the national population (Reynolds et al. 2002).[7]

Measures

Dependent Variables

The dependent variables comprise of 3 items i.e. Overall Entrepreneurial Propensity (OEP), Opportunity Entrepreneurial Propensity (OPP), and Necessity Entrepreneurial Propensity (NEC).

(OEP) is calculated from the responses covered in the surveys of representative samples of the adult population in each of the three economies (Singapore, Hong Kong and Taiwan). [8] OEP is

the sum of (1) those individuals involved in the start-up process (either as autonomous start-ups or as something being done in cooperation with a current employer) and (2) individuals active as owner-managers of firms less than 42 months old (owners-managers of new firms). [9]

To qualify for (1), the respondent had to fulfil each of the following criteria: (i) the respondent was currently trying, alone or with others, to start a new business, (ii) 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, (iii) the respondent would personally own all or part of the new business, and (iv) the business had not paid any full salaries for more than three months. [10]

To qualify for (2), the respondent had to fulfil each of the following criteria: (i) the respondent was currently managing a new business, (ii) the respondent personally owned all or part of the new business, (iii) the business has started in year 1999 or later (this meant that the business was, at most, 42 months old in June 2002). [11] Those who qualified for both definitions (1 and 2) were counted only once. OEP is measured by a dichotomous variable, taking value 1 if OEP fulfils either (1) or (2) of the above, and 0 if otherwise.

OPP is also a dichotomous variable, taking value 1 if the respondent indicated that he/she has voluntarily participated in an entrepreneurial activity to pursue an opportunity, and 0 if otherwise. Likewise, NEC is represented by value 1 if the respondent indicated that he/she has

participated in an entrepreneurial activity as a last resort, when other options for work or participation in the economy are absent or considered unsatisfactory, and 0 if otherwise.

Explanatory Variables

The predictor variables are self-efficacy, perception of opportunities, prior knowledge of entrepreneurs, and fear of failure. All the predictor variables were ascertained by "yes-no" statements, and they are coded 1 if the respondent answers "yes", and 0 if "no". Specifically, the following statements were used to gauge the respondents' positions on the predictors. For self-efficacy; "You have the knowledge, skill and experience required to start a new business", perception of opportunity; "In the next 6 months there will be good opportunities for starting a business in an area where you live", prior knowledge of entrepreneurs; "You know someone personally who started a business in the past 2 years", fear of failure; "Fear of failure would prevent you from starting a business".

Control Variables

In the analysis, we controlled for the respondents' age, gender, and education attainment. Age is used as a control variable in many studies because of its influence on career decisions. Younger individuals might be more willing to engage in risky entrepreneurial activities as they have less to lose if they were unsuccessful and can well take the lessons learned as experiences. On the other hand, older individuals may be in a better financial position to participate in entrepreneurial activities. This variable is represented by the actual age of the respondents.

Studies on demographic factors such as gender (Matthews & Moser, 1996) supported the long-standing view 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. The individuals' level of education attainment also contributes to their likelihood of being self-employed (Dolinsky et al., 1993). We classify level of education into 3 levels i.e. some secondary and below, secondary degree, and post secondary degree. Level of education is measured by 2 dummy variables, secondary degree and post secondary degree with some secondary and below as the reference category.

Analysis of Method

We use hierarchical logistic regression analyses to examine the impact and significance of these variables on the variance of various entrepreneurial propensities.

RESULTS AND DISCUSSION

Tables 1-3 report the regression results showing the influence of self-efficacy, prior knowledge of other entrepreneurs, perception of opportunities, and fear of failure on various facets of entrepreneurial propensities in Singapore, Hong Kong and Taiwan. The results show strong support for the self-efficacy hypothesis with the predictor statistically significant ($p<0.01$) across all entrepreneurial propensities in Singapore, Hong Kong and Taiwan. [12]

Insert Table 1 about here

Insert Table 2 about here

Insert Table 3 about here

Our second hypothesis that opportunity perception is positively related to business founding is partially supported. In the case of overall entrepreneurship, opportunity perception is significant in both Hong Kong and Taiwan, while for opportunity entrepreneurship, the predictor is significant only in Taiwan. The results imply that opportunity perception does not have a positive effect on entrepreneurial propensity in Singapore, which is possibly explained by the presence of large and prominent government-linked companies (GLCs) in the country. The presence of government linked companies in many sectors makes it difficult for start-ups in Singapore to penetrate existing and new markets (Wong et al., 2002). [13, 14] Moreover, for Hong Kong, the close proximity to China has an impact on perception of opportunities. Contrary to popular belief, doing businesses in China is not as easy as perceived. Yet, most people in Hong Kong accept that China provides tremendous business opportunities, and Hong Kong's close proximity to the Mainland makes it easier for its people to exploit these opportunities (Au et al., 2003). Hence, this explains the differences between Singapore and Hong Kong.

While prior knowledge of other entrepreneurs has a positive impact on overall and opportunity entrepreneurship, it is only significant in Singapore, providing partial support for hypothesis 3 (Tables 1 and 2). The non-significant effect of prior knowledge of other entrepreneurs in the case of Hong Kong and Taiwan can be attributed to the relative ease and speed at which businesses in Hong Kong and Taiwan can be formed, from the point of registration to operation (Chua et al., 2002). Limited red-tape and bureaucracy in both economies preclude entrepreneurs from relying on personal contacts to get things done. The Expert Survey of The Global

Entrepreneurship Monitor (GEM) project confirms that Hong Kong and Taiwan's strengths lie in their pro-business stance and easy access to a high quality and affordable pool of professional support services (Reynolds, et al., 2002). Morever, Chu (1996) in her comparative study of Hong Kong and Canadian Chinese entrepreneurs highlighted that Hong Kong entrepreneurs have less tendency to use social channels for their entrepreneurial pursuits as compared to their Canadian counterpart.

The hypothesis on fear of failure is also partially supported as it is significant only in Singapore for overall and opportunity entrepreneurship (Tables 1 and 2). Hong Kong's entrepreneurs are generally unfazed by risk of failure. This positive sentiment can probably be explained by Hong Kong's "guerrilla-styled entrepreneurship", a business strategy usually employed by small and nimble businesses (Yu, 2000). According to Yu, the "guerrilla" entrepreneur is alert to opportunities, moves fast to make and sell their products, and is quick to divert their operations when the number of competitors increases. Their adaptive behaviour significantly reduces the inherent risks involved in business operations. In light of this argument, fear of failure is inconsequential when the entrepreneur is able to manage uncertainties and make risky situations work to his advantage.

However, in all three economies, fear of failure is non-significant for necessity entrepreneurs (Table 3). Necessity entrepreneurs are likely to be individuals who have low opportunity costs (Amit & Schoemaker, 1993) and people who face insurmountable obstacles in the labour market

(Timmons, 1999). Therefore, these individuals do not fear the possibility of failure when they seek entrepreneurship as an alternative form of employment (Mesch and Czamanski, 1997).

The explanatory betas of the regression analyses (Table 1-3) indicate that the impact of the antecedent factors is largest for self-efficacy for both overall entrepreneurial propensity and opportunity entrepreneurship. We also test for possible interaction effects among the variables but contrary to the findings by Lee et al. (2004), who found significant interaction effects between self-efficacy and fear of failure and gender, both terms are non-significant in our East Asian NIEs sample.

The variance explained for overall entrepreneurship (Singapore - $R^2 = 0.26$; Hong Kong - $R^2 =$ 18; Taiwan - $R^2 = 17$), opportunity entrepreneurship (Singapore - $R^2 = 0.25$; Hong Kong - $R^2 =$ 0.21; Taiwan - $R^2 = 0.22$), and necessity entrepreneurship (Singapore - $R^2 = 0.18$; Hong Kong - $R^2 = 0.18$; Taiwan - $R^2 = 0.14$) are quite satisfactory, given the relatively crude measures of the explanatory variables. Interestingly, the results show that the predictors, which are individual-level variables, explain a higher proportion of the variance in business founding in Singapore as compared to Hong Kong and Taiwan, implying that intrinsic and perceptual factors are more pronounced in the former.

In terms of the relative proportion of variance explained by the predictor variables vs. control variables (in the case of overall entrepreneurial propensity), the former contributes 17%, 12%, and 11% of the variance in entrepreneurial propensity as compared to only 9% and 6% by the

latter in Singapore, Hong Kong, and Taiwan respectively. In all three economies, the contribution of the predictor variables is higher for opportunity entrepreneurship compared to necessity entrepreneurship.

In contrast to existing empirical evidence on the relationship between demographic factors and entrepreneurial propensity, the regression analyses provided mixed results. Gender is found to have a significant impact in Singapore in the case of overall and opportunity entrepreneurship ($p < 0.01$) while age is significant in Taiwan in the case of overall and opportunity entrepreneurship ($p < 0.05$). Of all the education attainment levels, only secondary education is found to have a significant impact in Taiwan in the case of overall entrepreneurship ($p < 0.05$). [15] However, all the signs of the coefficients are in the expected direction (positive for secondary and post secondary education and negative for age squared and gender). The negative sign of the beta coefficient for age-squared demonstrates that both younger and older individuals are likely to embark on entrepreneurial activities.

As observed in the correlation matrixes in Tables 4, 5 and 6, with the exception of fear of failure in Hong Kong and Taiwan, we find that all the predictor variables are significantly correlated with overall entrepreneurial propensity and opportunity entrepreneurship. The correlations are particularly stronger between overall entrepreneurship, opportunity entrepreneurship, and the predictor variables. The correlation coefficients between all facets of entrepreneurial propensities and the predictor variables are strongest for self-efficacy. The weaker associations between the predictors and necessity entrepreneurship in comparison to

other entrepreneurial propensities is not surprising considering that in all the three NIEs, necessity entrepreneurship (NEC) accounts for less than half of overall entrepreneurial propensity (OEP), while opportunity entrepreneurship (OPP) accounts for more than 60% of OEP. [16]

Insert Table 4 about here

Insert Table 5 about here

Insert Table 6 about here

IMPLICATIONS

Since the inception of entrepreneurship as a legitimate academic field, entrepreneurship scholars have strived to develop a consensus on the individual-level antecedents, which are instrumental in precipitating entrepreneurial actions. First, this study provides corroboration that self-efficacy positively influences entrepreneurial propensity in all the three NIEs. The high impact and significance of self-efficacy on entrepreneurial pursuits suggest that this antecedent should be further stimulated.

Policy makers in general are concerned on how to encourage growth of new businesses. The key for them is to channel their resources selectively, focusing on individuals with high self-efficacy, and on those who lack self-efficacy to enhance their entrepreneurial self-efficacy. Besides using conventional entrepreneurship education, training and feedback (Gatewood et al. 1995), practical teaching methods in business and entrepreneurship, which expose the

individuals to real-life entrepreneurship risk situations and innovative business activities, are essential. Examples of such programmes are Junior Achievement in the US, and Young Enterprise in the UK.

Prior literature has indicated that self-efficacy arises from a number of sources (Boyd & Vozikis, 1994). One of these sources is the level of knowledge and skills possessed by the individual (Sweeney, 1985). The most influential avenue, in which these knowledge and skills are acquired, is from the individual's past employments. Therefore, it is essential for the government and policy-makers alike to provide a supportive working environment for existing employees; a working environment that provides employees with maximum opportunities for innovation and creativity as well as an environment that disposes the employees to commercial experience and customer contacts (Gompers et al. 2003). Past studies have stressed that a supportive environment like the above is more likely to enhance learning and the perception of feasibility for entrepreneurship (Krueger & Brazeal, 1994).

Second, fear of failure has an adverse impact on entrepreneurial propensity in Singapore. This is an important point for Singapore to note as most people in the country are still risk-adverse and prefer the lower risk environment of paid employment. Singapore as compared to Hong Kong and Taiwan has more stringent bankruptcy laws, where the penalty imposed on bankrupt businessmen is rather severe and failed entrepreneurs are often blacklisted. It is imperative for relevant authorities to not only implement initiatives, which promote the antecedents to entrepreneurship but reduce if not eliminate deterrents such as fear of failure. An example of a national initiative, which eases fears on business failure is that of the UK, where the Secretary of

Trade and Industry, Stephen Byers proposed the change of bankruptcy laws to allow bankrupt businessmen, who acted responsibly a second-chance to quality for substantial re-start capital.

Third, while prior knowledge of other entrepreneurs is a strong predictor for entrepreneurship only in Singapore, it is by no means an indication that social relationship is non-significant for entrepreneurship in Hong Kong and Taiwan. The results are not necessarily a contradiction of existing evidence in the literature but instead they provide an alternative view of social network. Prior knowledge of other entrepreneurs does not imply the strength or quality of the tie but merely suggests that the respondent "knows" of a fellow entrepreneur, who can simply be an acquaintance with little network support. Therefore, it is not only important to know of other individuals who have started businesses but it is essential to have contacts with the right people, who are able to provide assistance in the entrepreneurial process (Lin, 1999).

In a study by Chow and Ng (2004) on the characteristics of Chinese personal ties in Hong Kong, the authors provided additional support on the low social dependence among their Hong Kong subjects. They attributed the low social dependence on a number of factors such as the growing individualistic work environment in Hong Kong, and the frequency of job change that prohibits people from building bonds among colleagues at the workplace. Indeed, some commentators advocated that due to modernisation and urbanisation, Hong Kong is "suffering from a long-term depletion of its stock of social capital" (Lau, 2000). [17]

Given that prior knowledge of other entrepreneurs is a critical antecedent to entrepreneurship, policy-makers should be more aggressive in organising networking events to promote social

interactions between prospective and successful entrepreneurs.[18] Existing entrepreneurs, particularly established entrepreneurs should also volunteer time to mentor both the youth and aspiring entrepreneurs.[19] The extensive and systematically organised networking and mentorship assistance available in Singapore probably explain why prior knowledge of entrepreneurs has a significant effect on entrepreneurial propensity. On the contrary, networking and mentorship efforts in Hong Kong and Taiwan are more ad hoc, autonomous and not as organised as in Singapore. Most of the networking opportunities in the two NIEs of Hong Kong and Taiwan are indirectly embedded in training courses and business plan competitions. [20, 21] Initiatives such as student internships schemes with high-growth start-ups, which provide students with practical experience of working in a start-up environment under direct supervision by an entrepreneur are also effective means of improving webs of social relationships (Bottomley et al. 2002).

Fourth, the results provide evidence that perception of opportunities has no influence on entrepreneurial propensity in Singapore. As mentioned earlier, this is partly due to the dominance of large GLCs, which prevent new and growing firms from entering and competing in the market. Besides GLCs, entrepreneurs in Singapore have to contend with the presence of large local conglomerates and MNCs, which make it hard for entrepreneurs to compete on a level playing field. The government should play an active role in the economy by regulating the market and providing opportunities for entrepreneurs to get a good head start in their chosen market. Given the influence of government actions on cultural and perceptual changes (Li and Karakowsky, 2002; Tan, 2002; Wong, 1988), it is important for policy makers to set the pace for other established firms to emulate by considering start-ups with unproven sales record for tenders and contracts.

Our Asian findings, particularly in Singapore are congruent with prior results of male dominance in entrepreneurship. The significant gender gap in entrepreneurial pursuits has been documented (Matthews and Moser, 1996; Reynolds et. al., 2002), and prior Global Entrepreneurship Monitor (GEM) reports have consistently emphasised the importance of supporting more female entrepreneurs in the society.

Finally, given the perceptive nature of the explanatory variables used in this study, it is imperative for entrepreneurship scholars to devote greater attention to the study of entrepreneurial cognition (Busenitz & Lau, 1996; Baron, 1998; Mitchell et al., 2002) in order to understand how entrepreneurs and potential entrepreneurs use their cognitive properties to help them identify, evaluate, and exploit opportunities for new venture creation.

LIMITATIONS

While the findings of this study highlight the effects of self-efficacy, opportunity recognition, prior knowledge of other entrepreneurs and fear of failure on entrepreneurial propensity in the three NIEs of Singapore, Hong Kong and Taiwan, a limitation and future research direction is apparent. The measurements used for the predictors were only single item measures of the variables of interest. While these crude single item measures of the predictors are justifiable or perhaps even necessary given the nature of the large, cross-country survey methodology, future research may need to develop more refined, multi-item measures to improve the robustness of the constructs.

CONCLUSION

This paper contributes to the extant literature on entrepreneurship antecedents in three ways. First, the paper reports that self-efficacy, perception of opportunities, prior knowledge of other entrepreneurs, and fear of failure have different effects on entrepreneurial propensity in the three newly-industrialised economies of Singapore, Hong Kong, and Taiwan. While self-efficacy influences opportunity-based entrepreneurship in all three economies, fear of failure has an adverse impact only in Singapore. Similarly, while perception of opportunities has a positive impact for overall entrepreneurial propensity in Hong Kong and Taiwan, it is non-significant in Singapore. Interestingly, prior knowledge of other entrepreneurs appears to have a positive effect only in Singapore for opportunity entrepreneurship.

Second, using a large sample, we are able to show that among the predictors, self-efficacy has the largest impact on all facets of entrepreneurial propensities. Third, we show that while the predictors are common across all facets of entrepreneurial propensities, their relative significance or importance vary across different types of entrepreneurial activities.

NOTES

[1] Please refer to Appendix 1 for a detailed description of the entrepreneurial scenarios in Singapore, Hong Kong, and Taiwan.

[2] The Global Entrepreneurship Monitor (GEM) programme was initiated in 1997 by leading scholars from Babson College and the London Business School, with strong support from the Kauffman Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation. GEM's primary objective is to estimate the prevalence of individuals involved in entrepreneurial activity at a single point in time in the participating countries (Reynolds et al., 2005). The programme has expanded steadily from 10 countries in 1999, to 21 countries in 2000, 29 countries in 2001, 37 countries in 2002, 31 countries in 2003, and 34 countries in 2004 (Acs et al., 2004).

[3] The TEA propensity is calculated from the GEM adult population survey as the propensity of respondents involved in the start-up process (nascent entrepreneurs) and individuals active as owner-managers of firms less than 42 months old.

[4] The 37 countries participated in GEM 2002 are Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Norway, Portugal, Poland, Russian, Spain, Sweden, the United Kingdom, India, Japan, Korea, Singapore, Argentina, Australia, South Africa, Taiwan (Chinese Taipei), Chile, China, Croatia, Hong Kong, Iceland, Slovenia, Switzerland, Thailand, Brazil, Mexico, Canada, and the United States (Reynolds et al. 2002).

[5] Detailed descriptions of the GEM data collection design and implementation is provided by Reynolds et al. (2005).

[6] Appendix 2 provides the distribution of respondents based on a selection of demographic and entrepreneurial characteristics.

[7] Further details on how the weights are developed and applied are provided by Reynolds et al. (2005).

[8] Tang and Koveos (2004) used similar measure of Overall Entrepreneurial Propensity (OEP) in their study of venture entrepreneurship. OEP is known as the Total Entrepreneurial Activity (TEA) index in the GEM project.

[9] Reynolds et al. (2005) provided support for the reliability and validity of the OEP measure. The authors reported that the relative rankings of the participating countries on the TEA index are stable over several years, and that the correlations of the year to year results are high. Furthermore, in some countries (Ireland, South Africa and Uganda), where the surveys were conducted twice in the same year, comparable results were obtained. Additionally, when the sample for a given country (e.g. Hong Kong) is split and the results of the two sub-samples compared, similar results were obtained. The authors advocated that OEP is a valid measure because it captures an important aspect of national level entrepreneurship i.e. street-level entrepreneurship based on responses from the general population.

[10] The 3 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).

[11] Reynolds et al. (2005) provided the rationale for using 42 months as the time frame to separate new firms from established firms.

[12] Self-efficacy is statistically non-significant in Taiwan in the case of Necessity Entrepreneurship.

[13] The Singapore 2002 Expert Survey of the Global Entrepreneurship Monitor (GEM) project reports that both HK and Taiwan ranked higher than Singapore in term of market openness. A high rank on market openness indicates that the respondent perceives the ease of market entry, the absence of domination by large firms, and a level playing field for all firms (Wong, et al., 2002).

[14] The respondents of the Expert Survey are representatives of actors in the entrepreneurial economy. They are entrepreneurs, policy makers, venture support professionals and investors, who have considerable knowledgeable about entrepreneurship from their professional perspectives.

[15] Appendix 3 provides the detailed mean levels of the various entrepreneurial propensities in Singapore, Hong Kong and Taiwan based on the predictors and control variables employed in this study.

[16] Necessity Entrepreneurship (NEC) accounts for 15% of Overall Entrepreneurial Propensity (OEP) in Singapore, 35% in Hong Kong, and 16% in Taiwan.

[17] Lau (2000) estimated that 75% of people in Hong Kong had no membership of any groups.

[18] In Singapore, there are seven chambers and federations and twelve entrepreneur outreach groups that provide access to enterprise networks. Refer to http://www.ace.org.sg for further information on the various professional bodies, government agencies and non-profit organisations that provide access to enterprise network in Singapore.

[19] In light of this, Singapore has eight organisations that provide entrepreneurs and budding entrepreneurs access to mentorship programmes. Refer to http://www.ace.org.sg for further information on these organisations.

[20] Please refer to www.careernet.org.tw, www.nasme.org.tw, and www.moeasmea.gov.tw for further information on Taiwan's networking initiatives.

[21] Please refer to www.tid.gov.hk, www.hkabpw.org and www.hkwpea.org for further information on Hong Kong's mentorship programmes.

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Table 1. Logistic regression examining Overall Entrepreneurial Propensity (OEP)

	Singapore		Hong Kong		Taiwan	
Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	Exp (B)	Exp (B)	Exp (B)	Exp (B)	Exp (B)	Exp (B)
Controls						
Constant	-0.007***	-0.012***	-0.045**	-0.021**	-0.001***	-0.000***
Age	1.236***	1.115	1.019	0.987	1.187***	1.225**
Age Squared	-0.997***	-0.998*	-1.000	-0.999	-0.998***	-0.997**
Gender (Female = 1)	-0.258***	-0.359***	-0.645	-1.014	-0.637**	-0.807
Secondary Education dummy	0.660*	0.683	1.288	1.031	5.091***	5.217***
Post Secondary dummy	0.707	0.684	2.110**	1.642	3.000***	3.221*
Main Effects						
Self-efficacy (Yes = 1)		7.211***		7.353***		5.081***
Perception of Opportunities (Yes = 1)		1.329		2.002**		2.256***
Know an entrepreneur (Yes = 1)		1.732***		1.141		0.890
Fear of failure		-0.557**		-1.460		-0.993
Chi-square	65.460	156.074	21.098	59.897	35.637	80.395
Chi-square change		90.614***		38.799***		44.758***
Nagelkere R^2	0.09	0.26	0.06	0.18	0.06	0.17

*Sig. at 10% ** Sig. at 5% *** Sig. at 1%

Table 2. Logistic regression examining Opportunity Entrepreneurial Propensity (OPP)

	Singapore		Hong Kong		Taiwan	
Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	Exp (B)	Exp (B)	Exp (B)	Exp (B)	Exp (B)	Exp (B)
Controls						
Constant	-0.015***	-0.022	-0.106	-0.050	-0.030*	-0.090
Age	1.168**	1.059	0.939	0.908	0.016**	1.281**
Age Squared	-0.997***	-0.999	-1.000	-1.000	-0.023**	-0.997**
Gender (Female = 1)	-0.269***	-0.410	-0.705	-0.973	-0.106	-0.892
Secondary Education dummy	0.634	0.637	1.042	0.593**	0.004***	0.000
Post Secondary dummy	0.715	0.666	3.117***	2.394	0.001***	0.000
Main Effects						
Self-efficacy (Yes = 1)		7.268***		6.970***		6.365***
Perception of Opportunities (Yes = 1)		1.343		0.981		2.568***
Know an entrepreneur (Yes = 1)		2.009***		2.277*		0.976
Fear of failure		-0.542**		-1.544		-0.968
Chi-square	51.564	134.211	23.669	49.758	49.271	92.152
Chi-square change		82.647***		26.089***		42.881***
Nagelkere R^2	0.08	0.25	0.09	0.21	0.09	0.22

*Sig. at 10% ** Sig. at 5% *** Sig. at 1%

Table 3. Logistic regression examining Necessity Entrepreneurial Propensity (NEC)

	Singapore		Hong Kong		Taiwan	
Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	Exp (B)	Exp (B)	Exp (B)	Exp (B)	Exp (B)	Exp (B)
Controls						
Constant	-0.000***	2.119**	-0.001**	-0.001**	-0.037	-0.002
Age	2.341**	1.913*	1.219	1.137	1.041	1.379
Age Squared	-0.9889**	-0.992*	-0.997	-0.998	-0.999	-0.993
Gender (Female = 1)	-0.278**	-0.244*	-0.533	1.088	-0.321*	-0.229*
Secondary Education dummy	-0.748	-0.968***	1.823	1.582	-0.488	-0.350
Post Secondary dummy	-0.594	-0.745	-0.833	-0.659	-0.272*	-0.239
Main Effects						
Self-efficacy (Yes = 1)		-0.142***		7.443***		2.021
Perception of Opportunities (Yes = 1)		-0.974		5.503***		-0.858
Know an entrepreneur (Yes = 1)		2.164		-0.295*		-0.616
Fear of failure		-1.693		-1.294		-0.857
Chi-square	17.809	26.631	4.988	28.707	11.256	19.284
Chi-square change		8.822*		23.719***		8.028*
Nagelkere R^2	0.10	0.18	0.03	0.18	0.07	0.14

*Sig. at 10% ** Sig. at 5% *** Sig. at 1%

Table 4. Std. Deviation, Mean, and Correlation among Variables (Singapore) N = 1,920

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. OEP [1]	1.000											
2. OPP [2]	0.910**	1.000										
3. NEC [3]	0.372**	-0.021**	1.000									
4. Age	-0.065**	-0.067**	-0.002	1.000								
5. Gender (1=Female)	-0.141**	-0.126**	-0.052*	0.017	1.000							
6. Below secondary education	-0.034	-0.032	-0.017	-0.011	0.034	1.000						
7. Secondary education	0.018	0.021	0.001	0.026	0.029	0.008**	1.000					
8. Post secondary education	0.011	0.007	0.013	0.016	0.000	-0.445**	-0.642**	1.000				
9. Self-efficacy	0.282**	0.264**	0.093*	0.026	0.175**	-0.017	0.014	0.001	1.000			
10. Perception of opportunities	0.105**	0.107**	0.007	0.115**	-0.008	-0.022	-0.039	-0.020	0.114	1.000		
11. Know an entrepreneur	0.166**	0.165**	0.018	0.143**	0.105**	-0.034	0.020	0.008	0.183	0.192	1.000	
12. Fear of failure	-0.083**	-0.076**	-0.036	0.005	0.078**	-0.017	0.008	0.022	-0.066*	-0.003	-0.032	1.000
Mean	0.059	0.049	0.009	37.601	0.485	0.223	0.367	0.410	0.270	0.170	0.280	0.410
Std. Deviation	0.236	0.217	0.092	11.442	0.500	0.212	0.282	0.293	0.242	0.173	0.247	0.292

[1] Overall Entrepreneurial Propensity

* Sig. at 5%

[2] Opportunity Entrepreneurial Propensity

** Sig. at 1%

[3] Necessity Entrepreneurial Propensity

Table 5. Std. Deviation, Mean, and Correlation among Variables (Hong Kong) N = 1,638

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. OEP [1]	1.000											
2. OPP [2]	0.800**	1.000										
3. NEC [3]	0.590**	-0.014**	1.000									
4. Age	-0.09**	-0.091**	-0.026	1.000								
5. Gender (1=Female)	-0.035	-0.023	-0.029	0.018	1.000							
6. Below secondary education	-0.085**	-0.099**	-0.100	-0.352**	0.047	1.000						
7. Secondary education	0.016	0.002	0.023	0.202**	-0.020	-0.426**	1.000					
8. Post secondary education	0.084**	0.107**	0.003	0.265**	-0.040	-0.843**	-0.128**	1.000				
9. Self-efficacy	0.199**	0.176**	0.145*	0.026	-0.235**	-0.125**	0.033	0.117**	1.000			
10. Perception of opportunities	0.139**	0.032	0.105	0.068**	-0.058*	-0.065*	-0.013	-0.064*	0.147	1.000		
11. Know an entrepreneur	1.088**	0.115**	0.004	0.172**	-0.058*	-0.114**	0.004	0.128**	0.184	0.109	1.000	
12. Fear of failure	-0.019	-0.003	-0.026	0.015	-0.025	-0.072**	0.054*	0.046	-0.024**	-0.024	-0.041	1.000
Mean	0.028	0.018	0.010	38.941	0.494	0.740	0.060	0.200	0.230	0.200	0.250	0.260
Std. Deviation	0.165	0.133	0.099	11.934	0.500	0.240	0.239	0.202	0.222	0.203	0.235	0.281

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

[1] Overall Entrepreneurial Propensity
[2] Opportunity Entrepreneurial Propensity
[3] Necessity Entrepreneurial Propensity

Table 6. Std. Deviation, Mean, and Correlation among Variables (Taiwan) N = 1,977

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. OEP [1]	1.000											
2. OPP [2]	0.879**	1.000										
3. NEC [3]	0.399**	-0.016	1.000									
4. Age	-0.041	-0.022	-0.045*	1.000								
5. Gender (1=Female)	-0.045*	-0.037	-0.044	0.008	1.000							
6. Below secondary education	-0.092**	-0.106**	-0.005	-0.475**	0.042	1.000						
7. Secondary education	0.090**	0.091**	0.015	0.210**	0.011	0.473**	1.000					
8. Post secondary education	0.006	0.006	0.020	0.224**	0.027	-0.441**	-0.582**	1.000				
9.Self-efficacy	0.206**	0.206**	0.042	0.012	0.189**	-0.142**	0.109**	0.019	1.000			
10. Perception of opportunities	0.089**	0.097**	0.001	0.010**	-0.015	-0.078**	-0.015	-0.053*	0.133	1.000		
11. Know an entrepreneur	0.05*	0.059*	0.006	0.122**	0.098**	-0.138**	0.046	0.078**	0.143	0.150	1.000	
12. Fear of failure	-0.021	-0.026	-0.003	0.071**	0.076**	-0.059*	0.019	0.032	-0.041	-0.025	0.051	1.000
Mean	0.043	0.033	0.007	37.786	0.507	0.270	0.380	0.350	0.310	0.170	0.280	0.410
Std. Deviation	0.202	0.180	0.084	12.347	0.500	0.241	0.286	0.278	0.263	0.262	0.262	0.299

[1] Overall Entrepreneurial Propensity

* Sig. at 5%

[2] Opportunity Entrepreneurial Propensity

** Sig. at 1%

[3] Necessity Entrepreneurial Propensity

Appendix 1. Entrepreneurial Scenario

Singapore

As at end of June 2003, the total number of Singapore residents is 3.437 million, 75% of which are Chinese, and the rest are Malay, Indian, and others (DOS, 2003). The median age of the population is 35 years old, and the male/female ratio is 0.99. Generally, the government plays an active and dominant role in the economy, with early efforts concentrated on attracting multi-national corporations into the country to spur employment levels and develop the economy, and subsequent efforts focused on establishing government bodies and agencies to assist local enterprises and to enhance local entrepreneurial culture. The various government bodies and agencies are Economic Development Board (EDB), Standards, Productivity, and Innovation Board (SPRING Singapore), Intellectual Property Office of Singapore (IPOS), Infocommunications Development Authority (IDA), Agency for Science, Technology & Research (A*STAR), International Enterprise Singapore (IE Singapore).

The EDB is Singapore's leading government agency for promoting start-up environment, and inward foreign direct investments, while SPRING is the main agency that drives the SME21 initiative for the creation of vibrant and resilient SMEs that will enhance Singapore's competitiveness and economic growth. It provides assistance to SMEs on product and process development, testing and evaluation. IPOS, formerly known as the National Patent Information Centre provides patent information services, and the Patent Application Fund, a financial assistance scheme to help applicants defray the costs of patent applications. IDA on the other

hand, regulates the local telecommunications and e-commerce practices as well as administers various schemes to promote computerisation and Internet applications in local enterprises.

Formerly known as the National Science & Technology Board (NSTB), A*STAR has the mission to encourage, develop and nurture human capital in scientific and engineering research for a knowledge-based economy in Singapore. The agency focuses on the development, nurturing and deployment of research and development manpower. Finally, IE Singapore, formerly known as the Singapore Trade and Development Board (TDB), helps Singapore-based companies who are willing and able to grow internationally by offering them a wide range of services, both locally and overseas to help companies shorten their learning curve and make the right connections. It also promotes Singapore as an SME hub by attracting enterprises from other countries to be based locally.

Despite the far-reaching role asserted by the government in assisting local businesses, and promoting the spirit of entrepreneurship in Singapore, some quarters believe that the sovereign presence of the government in businesses has a discouraging effect on entrepreneurship (Tan & Tay, 1994). The report by the Sub-Committee on Entrepreneurship Development (1985), which was established by the government after the economic recession in 1985, offers an interesting assessment of how the government's development policies have affected the entrepreneurial environment in Singapore. First, the Report points out that the government's initial efforts in attracting inward foreign direct investment, and in establishing large government-linked companies such as Singapore Airlines and Singapore Telecommunications have inevitably

relegated local entrepreneurs into an inferior role in the economy. Second, the Report observes that due to Singapore's economic success in terms of high employment levels, high salaries, and high job securities, Singaporeans have become accustomed to the comforts of being employed and therefore, are risk-adverse in starting up their own businesses. Basically, they see no incentives and motivations to venture into their own businesses.

Recognising the importance of entrepreneurship for economic growth and global competitive advantage, and that the government's current policies have negative effects on the country's entrepreneurial ability, the government is gradually relinquishing the role of being a "nanny" in the economy and progressively "cutting the apron strings" as eloquently articulated by Singapore's Prime Minister, Mr. Lee Hsien Loong in one of his speeches in 2004.

Hong Kong

Early emigrant entrepreneurs from China largely fuelled Hong Kong's phenomenal economic growth and success (Wong, 1988). Many of these early emigrants fled from economic hardships to seek better lives outside of China. Those who were prosperous entrepreneurs before they left China lost their businesses while fleeing from the mainland as it fell to the Communist in 1949. These emigrants went to Hong Kong with few resources, and they worked mainly in the textiles and manufacturing industries. The British colonial government provide them a laissez-faire economic environment upon which they rebuilt their fortunes.

With a population of 7 million, Hong Kong is considered a small market by many entrepreneurs. North America and Europe have been the major markets for Hong Kong businesses. However, Hong Kong's proximity to China and its status as a Special Administrative Region of the mainland is one of the most unique aspects of its entrepreneurial experience and growth.

In recent years, Hong Kong encountered two economic downturns that have shaken business confidence. The first downturn occurred in 1997, followed by a brief recovery, while the second began in late 1998 and has lasted till to date. The SARs epidemic in the first half of 2003 further depressed the economic forecast. However, by the end of 2003, some recovery in the economy was reported with caution.

Small and Medium Enterprises (SMEs) characterize the efforts of Hong Kong's present-day entrepreneurs. SMEs are defined as manufacturing enterprises with fewer than 100 employees and non-manufacturing enterprises with fewer than 50 employees. Hong Kong's 290,000 SMEs account for 98% of the local enterprises, employing about 1.3 million people or 60% of the private sector employees. SMEs dominate the Services sector with the majority of activities taking place in import and export, followed by wholesale and retailing, and restaurants and hotels.

The HK government and its agencies operate a number of funding schemes and programs to support the development of SMEs and technology-related innovations. The various government agencies and funding schemes are Trade and Industry Department's Support and Consultation

Centre for SMEs, Trade Development Council, and Hong Kong Productivity Council. The Hong Kong Science and Technology Parks provides incubator services while the Innovation and Technology Commission operates the Small Entrepreneur Research Assistance Program.

The high cost of doing businesses, which include cost of offices, industrial rental properties, and wages is one of the most critical factors that prohibit people from starting businesses in Hong Kong. Many of the affected SMEs have moved their production operations to the Pearl River Delta in Southern China for lower land and labour costs. Apart from the high costs of doing business, Hong Kong has many positive attributes that support entrepreneurship. One of its strengths lies in its physical infrastructure of telecommunications, utilities and transportation. Starting a new business in Hong Kong is also relatively simple as one only has to register the company within one month of commencement.

Hong Kong's corporation tax of only 16% is generally favourable for companies, and with only 15% taxation of income sourced in Hong Kong is taxed, people are able to retain high levels of personal savings to finance new businesses.

Taiwan

Like other Asian NIEs, Taiwan began with few natural resources, but has achieved remarkable growth in the past several decades. Unlike its peers (Singapore and Hong Kong), Taiwan has not transformed into a financial center and a home to large MNCs. Instead, the impetus of its economic development comes from its indigenous manufacturing as well as its cluster economy.

Via its unique OEM strategy, where manufacturers make goods based on their clients' specifications and brand names, Taiwan is the world leader in many industries, from producing high technology intermediate devices to making luxury sporting goods. Traditional sectors and sophisticated fields of information technology alike, firms in Taiwan can be characterized as vertically disintegrated. The value chains of most industries are composed of numerous specialized firms that exploit their niches and contribute a single part or task required for making the end product. Instead of integrated manufacturing vertically, Taiwan's indigenous manufacturing makes mass production an aggregate effort.

In the early economic development, the prevalent subcontracting practices in Taiwan induce firms to concentrate their efforts in selected value-added activities. Small-scale enterprises constitute a significant portion of Taiwan's economic activities. SMEs on the average account for 98% of total business establishments, and they provide substantial opportunities to the labor market. To mitigate the lack of economies of scale due to small-scale operation, clusters are loosely formed by the market mechanism to provide synergy.

Due to the slow growth in overall population, increased education opportunities for youths, and structural changes in industries, the problems of labor shortage surfaced in the late 1990s. Therefore, for the manufacturing sector or some traditional labor-intensive industries, a wave of business migration has taken placed in the late 1990s, moving operations overseas to Southeast Asia or Mainland China while keeping the product development and financial control at home. With this migration wave, cross-border entrepreneurship becomes a recent phenomenon.

The typical cluster forming and specialized division of labor across entities also make spinoff entry an important form of entrepreneurial activities in Taiwan. In a cross country survey, labour mobility of Taiwanese entrepreneurs (prior to starting their own businesses) is the highest among the eight countries surveyed (Kantis, et. al, 2002). It is common for individuals in Taiwan to start new ventures that are related to the upstream or downstream activities of their original affiliations.

Self-employment is a popular option in Taiwan as compared to other industrialized societies, such that more than one fifth of the labor forces were self-employed (Lin 2001, Yu & Su 2004). The government has generally been supportive of entrepreneurial activities, providing a *laissez-faire* platform for new ventures with low capital and legal requirement for business establishments. The government also works with business associations to develop supportive infrastructures, such as credit facility to SMEs. More recently, incubation centers that affiliate with universities have been set up with public funding (under SME Administration) to promote high growth potential ventures. Public innovation support system has been considered to carry most pronounced impact in facilitating the formation of new ventures and new industries. The public research institute has effectively disseminated technology in the past two decades to new firms that in turn commercialize the RD efforts. Such state intervention provides an essential initial impetus for techno entrepreneurship that subsequently leads to economic structural change in Taiwan.

Appendix 2. Demographic and Entrepreneurial Characteristics of Respondents

	Spore	HK	Taiwan
Gender			
Male (%)	49	49	51
Female (%)	51	51	50
	100	100	100
Education			
Some secondary and below secondary (%)	22	74	26
Secondary (%)	37	6	38
Post Secondary (%)	41	20	35
	100	100	100
Age			
18-24 years old (%)	14	13	18
25-34 years old (%)	29	23	25
35-44 years old (%)	29	30	26
45-54 years old (%)	19	22	20
55-64 years old (%)	9	11	11
	100	100	100
Self-efficacy (%)			
Perceive start-up skills	27	23	31
Do not perceive start-up skills	73	77	69
	100	100	100
Perception of opportunities (%)			
Perceive Opportunities	17	20	17
Do not perceive opportunities	83	80	83
	100	100	100
Know entrepreneurs (%)			
Know entrepreneurs	28	25	28
Do not know entrepreneurs	72	75	72
	100	100	100
Fear of failure (%)			
Fear failure is a deterrent	41	36	41
Fail of failure is not a deterrent	59	64	59
	100	100	100

Appendix 3. Mean TEA Levels (%)

	OEP			OPP			NEC		
	Spore	**HK**	**Taiwan**	**Spore**	**HK**	**Taiwan**	**Spore**	**HK**	**Taiwan**
Gender (%)									
Male	9.3	3.3	5.2	7.7	2.1	4.0	1.4	1.2	1.1
Female	2.7	2.2	3.4	2.3	1.4	2.7	0.4	0.7	0.3
Education (%)									
Some secondary and below secondary	7.4	2.0	1.2	6.2	1.0	0.2	1.2	0.9	0.8
Secondary	5.4	4.0	6.6	4.4	2.0	5.4	0.9	2.0	0.9
Post Secondary	5.6	5.5	4.2	4.8	4.6	3.5	0.7	0.9	0.4
Age (%)									
18-24 years old	4.1	5.1	2.8	4.1	4.7	1.7	0.0	0.5	1.1
25-34 years old	9.3	4.5	6.5	7.8	2.6	4.9	1.1	2.1	1.2
35-44 years old	5.9	2.2	5.5	4.5	1.4	4.7	1.4	0.8	0.6
45-54 years old	4.6	0.8	3.3	4.0	0.3	2.8	0.8	0.5	0.3
55-64 years old	0.6	1.6	0.9	0.6	1.1	0.9	0.0	0.5	0.0
Self-efficacy (%)									
Perceive start up Skills	16.9	8.3	10.7	14.6	5.6	9.0	2.2	2.7	1.2
Do not perceive start-up skills	1.9	1.0	1.6	1.5	0.6	0.9	0.3	0.4	0.5
Fear of failure (%)									
Fear of Failure is a deterrent	3.6	3.3	4.2	3.1	1.9	3.1	0.5	1.4	0.7
Fear of Failure is not a deterrent	7.7	2.6	5.1	6.4	1.8	4.0	1.2	0.8	0.7
Know entrepreneurs (%)									
Know entrepreneurs	12.5	5.2	5.7	10.9	4.4	4.8	1.2	1.0	0.5
Do not know entrepreneurs	3.6	1.9	3.5	2.8	0.9	2.6	0.8	1.1	0.7
Perception of opportunities (%)									
Perceive opportunities	11.9	5.8	9.3	10.4	2.7	8.1	1.1	3.1	0.8
Do not perceive opportunities	5.2	2.2	4.0	4.2	1.7	3.0	1.0	0.5	0.8