Research Statement

My research embraces two main disciplines - entrepreneurship and innovation – and I work at the nexus of these two research communities, trying to build knowledge conduits among them. Regarding my research agenda, I am interested in specific challenges that entrepreneurs, entrepreneurial firms and policy-makers face in practice. Such interests were also derived from my experience with a high-tech start-up and the discussions with the contact from the Dutch Ministry of Economic Affairs.

One of the challenges that I am interested is the 'Valley of Death' phase of a start-up. The 'Valley of Death' refers to the difficulty of covering the negative cash flow in the early stages of a start-up before it can generate revenue. Many start-ups also experienced premature scaling in this phase by focusing on one dimension of the business and advancing it out of synchronizing with the rest of the operation. According to some reports, premature scaling is responsible for the failure of 74% of high-tech start-ups. Practitioners have widely discussed how to overcome the 'Valley of Death' phase. However, academic debate on this topic is relatively sparse. Therefore, my first two research streams address this challenge from an academic perspective and investigate two vital topics in the 'valley of death' phase of the start-up, i.e. growth and survival/exit, and entrepreneurial financing.

Growth and survival/exit: In the past a few years, I have developed my expertise in firm growth and survival/exit by writing research papers, presenting research findings to scholars in the leading entrepreneurship conference and to the audiences in practices such as Central Planning Bureau (CPB), and translating them to broader audiences via media such as *Financieel Dagblad Weekend*. Though firm growth and survival/exit have been extensively studied, the knowledge on both topics is still fragmented. This is mainly due to the heterogeneous nature of both phenomena. My recent studies (one of them is under-review by *Industrial and Corporate Change*) show that the relationship between growth (growth rate/growth mode) and exit differs depending on firm size, age and industries. Two current projects, using the Algemeen Bedrijven Register (ABR) and Production Statistics (PS) data from the Central Bureau of Statistics (CBS), further explore the heterogeneity in the relationship between growth and exit, by 1) examining the sectoral characteristics (i.e. innovative/high-tech sector versus low-tech sector) in the relationship; and 2) paying a special attention to the negative growth. Negative growth might not be necessarily an indicator of under-performers. Firms might shrink or downsize in a strategic manner so that they can boost health growth in the next period. Negative growth however can put risks on firm performance, e.g. excessive shrinking rate in a short period might lead to the malfunction of a firm which results into subsequent firm exit. Therefore, it is important to understand negative growth rates in various aspects (e.g. employment, turnover) and their relationships to firm survival in order to strategically manage growth in a holistic manner.

Build upon prior knowledge from my past and current projects, ***my first research stream*** focus on the growth and survival/exit in start-ups. Learned from my own experience with high-tech start-ups, managing growth to survive is especially challenging for many entrepreneurs in the early stage of their start-ups. Due to the exponential growth relative to their firm size (i.e. growing faster in order to reach the minimum efficient scales to survive), start-ups are more likely to face so called "curse of fast growth" or "growth setback" due to their deficiency of the 'right' resources, capabilities and organizational structure. My 2012 paper in the *Frontier of Entrepreneurship Research* shows that an excessive growth rate of 20% to 50% can increase the probabilities of firm exit due to bankruptcy in the group of young and micro firms. Therefore, in my future research, I like to investigate and develop certain patterns in growth strategies for start-ups given their own context (e.g. industrial characteristics, the engagement in innovation activities). Thereby, I can contribute practical implications to start-ups as regard growth in a sustainable way. The growth and survival of start-ups, in particular those of innovative start-ups, have a strong implications to policy-makers. My 2013 paper in the *Journal of Evolutionary Economics* suggests that innovation policy is not sufficient to promote the production of new knowledge; it is equally necessary to have entrepreneurs who turn this new knowledge into innovative products. This could be achieved through for instance regulatory exemptions for innovative new start-ups.

Entrepreneurial financing in the early stages of growth: My earlier research on firm growth and fast-growing enterprises show that the availability of financial capital is vital to micro and young firms to grow in

the early stage in order to survive. Existing literature has provided insights on sources of finance for start-ups and changing capital structures throughout the life-cycle of small firms. Financing the early-stages growth of a start-up is risky due to lack of experience and reputation of the entrepreneur, and a lack of knowledge of how competitors will respond. This results into the 'valley of death' phase of a start-up. In this phase, access to formal sources of finance (e.g. debt financing by bank) is seriously restricted while government subsidies cannot be expected to address this to a sufficient degree. Informal investors, such as angel investors, may substitute for unavailable formal sources of finance, but find it difficult to identify appropriate opportunities for investment. Meanwhile, young firms lack information about external investors. The upshot is that many are incapable of attracting external capital. Here, due to information asymmetries and agency problems, the market fails. The knowledge about this market failure is limited. Existing literature does not address why certain external financial sources are used to finance early-stage growth of a start-up. ***My second research stream*** addresses this question by taking the perspectives from both investors (supply-side) and entrepreneurial firms (demand-side).

The contextual variables cannot fully explain the investment decisions reached by both investors and entrepreneurial firms. For instance, my 2016 paper in *Technovation* indicated that a firm's intellectual capitals only matter in initial VC funding round. The investment process thus also seems to play a critical role. Therefore, my future research focuses on the events and behaviors in the search, due-diligence and negotiation processes as well as the post-investment events of the early-stage growth investment deal. Thereby, understanding the behavioral characteristics of informal investors (e.g. angel investors, independent investors), their roles in the early-stage development of start-up firms and the 'investment readiness' of entrepreneurial firms. To realize this project, I will conduct multiple case studies and collect primary survey data from investors and entrepreneurial firms (possibly to collaborate with UGCE[1]). This research aims at identifying the 'fit' between investors and entrepreneurial firms in their investment deals and examining how the 'fit' determines the type of investment sought and start-up performance while controlling for contextual variables. Finding a 'fit' external investor can make a significant implication to the performance of a start-up as they can provide not only the needed financial capital but also the required expertise and networks to leverage the start-up to the next level. As initial steps, one of my supervised master student used a problem-solving approach to conduct a case study (multiple interviews, desk research) on an independent investment company in the Netherlands to investigate the investment criteria and process, and help the company identifying its own identity as an investor. Furthermore, using the Kaufmann AIPP data, my coauthor and I have investigated the behavioral characteristics of angel investors in their investment decision making. The preliminary version of the paper has been accepted by the 2017 Babson conference and we plan to further develop the paper for a journal submission.

My third research stream is related to the micro-determinants of entrepreneurship. More specifically, I am interested in entrepreneurial behavior and the utility function (i.e. well-being) of entrepreneurs. *Who becomes an entrepreneur? How to make a successful entrepreneur? How entrepreneurs behave in their decision making? How entrepreneurs learn from their own experience? Are entrepreneurs happier?* These are reoccurring questions asked by entrepreneurship scholars. To address some of these issues, I have investigated the Theory of Planned Behavior model in a conditional setting by gender in my recent *International Small Business Journal* paper and found that females are less likely to enact their intention to actual start-up behaviors. Furthermore, my coauthor and I also look at the relationship between certain entrepreneurial motivations such as autonomy and entrepreneurial behavior in being persistent. Persistence is an important quality for entrepreneurs. For instance, being persistent to a failing business might financially costly however it reduce the emotional costs of business failure. Thus, persistence may be beneficial to recovery and promote subsequent entrepreneurial action. Moreover, I recently started a project with a researcher in University of Twente to investigate the role of spouse on entrepreneur's well-being after acquiring the SOEP database. While entrepreneur's well-being is treated independently in the current literature, we want to understand the interdependent utility function between the entrepreneur and her/his spouse. As the social support perspective suggests, both emotional support and instrumental support from the family facilitate an individual's success and her/his success in other domains. This project aims for the special issue of Journal of Business Venturing, with an ultimate goal, that is to established possible collaboration on EIT health partnership project with

[1] UGCE is referred to as University of Groningen Centre for Entrepreneurship

UGCE for future research. Last, using the same dataset, we are also going to investigate the relationship between health model and well-being in different entrepreneurship context (e.g. hybrid vs. independent).

Finally, to emphasize my personal interest in the context of familiness, ***my last research stream*** explores the role of family employees (especially paid ones) and the implication of their involvement on the performance (e.g. innovation) and succession of family businesses, as a continuity of my 2015 paper in the *Entrepreneurship Theory and Practice* on the well-being of paid family employees. Most of family business studies investigate these aspects only from the perspective of the owner/manager of the family business. However, family members are an important source of employment for the firm, particularly in the start-up phase, who worth the attention. In the 2017 Babson paper, my coauthor and I investigated the relationship between family employee and innovation of start-ups using an original panel data of Japanese start-ups. We find that using family employee decrease R&D investment however increase the transformation from R&D to innovation output. Furthermore, I developed a research project on family business professionalization with a consultant firm in the Netherlands. Scholars suggest that family firms would be more effective if they "professionalized". Recent studies show the positive correlation between performances and implementing professionalization practices. Though important, there is no consensus on the definition of professionalization in the literature and how it can be accomplished with family businesses. This causes difficulties in implementation by practitioners. There is a need to review the notion of professionalization in family businesses and align it to the views from practitioners. Two master students conducted their theses under this topic by taking the opinions from both family and nonfamily executives, thereby validating, detailing and extending the list of known factors of professionalization. An executive or so-called field perspective is established for future research.

Last but not least, as originally trained as an innovation scholar, I still work on the topics such as labor relation/HRM, knowledge and organizational capabilities on innovation performance, however shifting from large establishments to the context of entrepreneurial firms. Given my Asian origin, I am motivated to translate some of my research questions into the North-East Asia context and have been developing joint projects on entrepreneurship and innovation with scholars there in the last three years. For instance, with my Japanese coauthor, we have investigated external labor flexibility in relation to the innovation performance of Japanese start-ups, which is now in the process of revise and resubmit by *Technovation*. Moreover, I am also part of the network for Chinese scholars in Innovation, Entrepreneurship and Management where interesting projects can be initiated and developed in the future.