

Electronic Thesis and Dissertation Repository

6-28-2021 2:30 PM

Portfolio Entrepreneurs in China: A Mixed Methods Study

Tianjiao Xu, *The University of Western Ontario*

Supervisor: Parker, Simon, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Business

© Tianjiao Xu 2021

Follow this and additional works at: <https://ir.lib.uwo.ca/etd>



Part of the [Entrepreneurial and Small Business Operations Commons](#)

Recommended Citation

Xu, Tianjiao, "Portfolio Entrepreneurs in China: A Mixed Methods Study" (2021). *Electronic Thesis and Dissertation Repository*. 7879.

<https://ir.lib.uwo.ca/etd/7879>

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact wlsadmin@uwo.ca.

Portfolio Entrepreneurs in China: A Mixed Methods Study

Abstract

Entrepreneurs who found and manage at least two businesses simultaneously are portfolio entrepreneurs. Portfolio entrepreneurs have been shown to run fast-growing businesses and contribute significantly to wealth creation. Extant literature has examined how portfolio entrepreneurs differ from entrepreneurs who only run one business at a time and found differences in their demographic backgrounds, human capital, cognition, and other dimensions. However, extant research has treated portfolio entrepreneurs as one homogeneous group, when in reality, there is considerable heterogeneity within this group of entrepreneurs. In this dissertation, I aim to discuss one important distinguishing factor among portfolio entrepreneurs, namely the existence of synergy between businesses established and managed by the same portfolio entrepreneur. Portfolio entrepreneurs are categorized into two groups: synergizers (who run businesses that create greater aggregate value if managed as part of a portfolio than if managed separately) and non-synergizers (who run businesses that are independent of each other).

This dissertation investigated the following research questions based on the distinction made between synergizers and non-synergizers. First, I explored factors at the product, firm, and industry level that enable individuals to become synergizers rather than non-synergizers. Next, I examined how these two groups of portfolio entrepreneurs behave differently when making decisions regarding the hiring of top managers in their new ventures. I relate the differences in their decision-making to an outcome measure, namely portfolio entrepreneurs' job satisfaction.

I chose to collect data from a major Asian economy, China. I employed a mixed-methods approach to answer these research questions. A qualitative study of 33 Chinese portfolio

entrepreneurs was followed by two quantitative studies which used a sample of 105 portfolio entrepreneurs. A survey questionnaire was designed and administered to collect the quantitative sample of portfolio entrepreneurs. Snowball sampling was used in order to reach as many potential participants as possible in the collection of both qualitative and quantitative data.

From analyzing the quantitative sample, my results showed that entrepreneurs who produce more complex products tend to become synergizers rather than non-synergizers. Compared to non-synergizers, synergizers tend to hire more experienced top managers, a decision that ultimately leads to higher entrepreneurial job satisfaction. These findings highlight that heterogeneity of portfolio entrepreneurs is an important area of research, and the novel distinction of synergizers and non-synergizers has the potential to expand the theoretical discussion on portfolio entrepreneurship.

Summary for Lay Audience

Entrepreneurs who found and manage at least two businesses simultaneously are portfolio entrepreneurs. Portfolio entrepreneurs have been shown to run fast-growing businesses and contribute significantly to wealth creation. In this dissertation, I aim to discuss one important distinguishing factor among portfolio entrepreneurs, namely the existence of synergy between businesses established and managed by the same portfolio entrepreneur. Portfolio entrepreneurs are categorized into two groups: synergizers (who run businesses that create greater aggregate value if managed as part of a portfolio than if managed separately) and non-synergizers (who run businesses that are independent of each other).

This dissertation investigated the following research questions based on the distinction made between synergizers and non-synergizers. First, I explored factors at the product, firm, and industry level that enable individuals to become synergizers rather than non-synergizers. Next, I examined how these two groups of portfolio entrepreneurs behave differently when making decisions regarding the hiring of top managers in their new ventures. I relate the differences in their decision-making to an outcome measure, namely portfolio entrepreneurs' job satisfaction. I chose to collect data from a major Asian economy, China. I employed a mixed-methods approach to answer these research questions. A qualitative study of 33 Chinese portfolio entrepreneurs was followed by two quantitative studies which used a sample of 105 portfolio entrepreneurs. A survey questionnaire was designed and administered to collect the quantitative sample of portfolio entrepreneurs. Snowball sampling was used in order to reach as many potential participants as possible in the collection of both qualitative and quantitative data.

From analyzing the quantitative sample, my results showed that entrepreneurs who produce more complex products tend to become synergizers rather than non-synergizers.

Compared to non-synergizers, synergizers tend to hire more experienced top managers, a decision that ultimately leads to higher entrepreneurial job satisfaction. These findings highlight that in certain situations, portfolio entrepreneurs can benefit from running businesses that are synergistic in nature.

Statement of Co-authorship

The goal of this statement is to make clear to the examiners my contribution to the co-authored piece in my dissertation. Chapter 6 in my dissertation is a piece of joint work by myself and my supervisor Professor Simon Parker at Ivey Business School. In this document, I describe the nature and extent of contributions by myself and by my co-author.

My contribution to the work includes the following five aspects.

First, I have collected the data used for analysis. We used an online survey questionnaire to collect data from Chinese entrepreneurs. I was responsible for preparing materials needed for getting approval from Western Research Ethics Board. These materials include initial versions of survey and interview guides, letter of information/consent form, as well as recruitment letters and emails used to reach potential participants. The recruitment of participants started with key connections I have established in China. This is key to our sampling strategy as we relied on snowball sampling so having the initial seed contacts was crucial to obtaining the final sample. Prior to administering the survey, I have designed the survey based on my preliminary interviews with Chinese entrepreneurs. During the recruitment process, I was responsible for reaching out to potential participants in order to get a higher number of responses. In the end, we obtained a good sample size.

Second, after the data are collected, I contributed to the work by engaging in data cleaning and manipulation such that the sample was ready for testing potential hypotheses.

Third, I engaged in hypothesis development, with the help from my co-author and identified the key theoretical framework to be used. I drafted the hypothesis development section and my coauthor suggested changes during this process.

Fourth, I conducted the empirical analysis and tested our hypothesis using the data we have collected.

Finally, I drafted the early versions of the manuscript which included tables and charts that summarized our sample and results.

My coauthor has contributed to this manuscript by providing me with guidance throughout this entire process. He pointed me to the right direction for literature, methods and other aspects of theory building. After receiving the early drafts, he has made considerable changes to the manuscript to make the theory part more consolidated. He has spent a lot of time and made multiple rounds of revisions to the manuscript based on unofficial feedback we have received from other scholars to improve the narration, flow and structure of our manuscript. I estimate the percentage of the work conducted solely by me to be about 75%. I hope this document clarifies the amount of solely-conducted work by me.

Dedication

To my grandparents

ACKNOWLEDGEMENTS

The completion of this dissertation marks a significant milestone in my academic journey. I would like to take this opportunity to extend my sincere gratitude to those who have provided me with their guidance, help and support throughout my doctoral studies.

A number of people have provided guidance during my PhD journey. First and foremost, I am deeply indebted to my supervisor, Prof. Simon Parker. Over the years, Simon has provided me with thoughtful and far-sighted advice in numerous occasions. He has taught me how to craft theoretical arguments step by step, present works in a clear and captivating manner, handle feedback received in the broader academic community and many other skills that will prove to be crucial and invaluable in my lifetime. The level of rigor and academic excellence of his own works have inspired me to conduct scrutinized research and pursue a lifelong career in academia.

A debt of gratitude is owed to my supervisory committee and exam committee members. I would like to thank Prof. Mark Zbaracki and Prof. Lawrence Plummer for serving on my supervisory committee and providing deeply insightful feedback during the various stages of my dissertation writing. Thank you to Prof. Deniz Ucbasaran, Prof. Chengguang Li, and Prof. Yini Liu for joining my exam committee and helping me strengthen my dissertation and pushing me to think about future research directions.

I am grateful to other Ivey faculty members with whom I interacted in courses and other scholarly activities. I had the honor of learning from them and receiving invaluable feedback from them. Thank you to Lauren Cipriano, our program director, for creating such a friendly environment for the PhD community. I would also like to thank other Ivey PhDs, who made my doctoral studies a lot more enjoyable.

I want to thank my family for their phenomenon support. Special thanks to my father who connected me to key contacts during my data collection process. I cannot express my gratitude for the love, support and trust my grandparents have given me. I have learned so much from both of them and they made me who I am today. I aim to follow their steps and pass along their kindheartedness, generosity, empathy and resilience. Their unconditional love is where my inner strength comes from and will always be the source of courage for me to face any challenges in my life.

I never regret the decision of pursuing a PhD at Ivey Business School. The journey of PhD education is full of challenges, yet one of the most transformational and rewarding experiences in life. I will forever cherish the memories I had at Ivey.

Lastly, I would like to thank myself for not giving up at numerous points during this process. It was tough but you did it.

Thank you.

Table of Contents

ABSTRACT.....	ii
SUMMARY FOR LAY AUDIENCE.....	iv
STATEMENT OF COAUTHORSHIP.....	vi
ACKNOWLEDGEMENT.....	vii
CHAPTER 1. INTRODUCTION.....	1
1.1. EXAMINATION OF EXISTING DEFINITIONS IN THE LITERATURE.....	1
1.2. DEFINITION OF ENTREPRENEURS AND PES	3
1.3. MOTIVATIONS FOR STUDYING PES	11
1.4. PREVIEW OF THE CHAPTERS.....	13
CHAPTER 2. LITERATURE REVIEW.....	16
2.1. LITERATURE COMPARING NOVICE, SERIAL AND PORTFOLIO ENTREPRENEURS	16
2.2. REVIEW OF LITERATURE ON PE.....	22
2.3. REVIEW OF QUANTITATIVE DATA COLLECTION ON PORTFOLIO ENTREPRENEURS	41
2.4. SYNERGY AND PORTFOLIO ENTREPRENEURSHIP.....	52
CHAPTER 3. METHODOLOGY AND SAMPLE CONSTRUCTION	56
3.1. OVERARCHING RESEARCH DESIGN.....	56
3.2. QUALITATIVE SAMPLE CONSTRUCTION.....	64
3.3. QUANTITATIVE SAMPLE CONSTRUCTION.....	69
CHAPTER 4. FINDINGS FROM QUALITATIVE SAMPLE	82
4.1. DATA ANALYSIS.....	86
4.2. RESULTS FROM THE QUALITATIVE STAGE.....	87
CHAPTER 5. FINDINGS FROM QUANTITATIVE SAMPLE (STUDY 1)	109
5.1. HYPOTHESIS DEVELOPMENT.....	109
5.2. DATA, VARIABLES AND METHOD.....	123
5.3. RESULTS.....	134
5.4. DISCUSSION.....	135
CHAPTER 6. FINDINGS FROM QUANTITATIVE SAMPLE (STUDY 2)	139
6.1. MOTIVATIONS FOR STUDYING PES' HIRING OF TOP MANAGERS.....	139
6.2 THEORETICAL FRAMEWORK	143
6.3. DATA, MEASURES AND METHOD.....	153
6.4. RESULTS.....	161
6.5. DISCUSSION.....	166
CHAPTER 7. CONCLUDING REMARKS.....	171
CONTRIBUTIONS.....	171
LIMITATIONS.....	173
FUTURE DIRECTIONS.....	174
REFERENCES	178
APPENDIX 1. ADAPTED JOB SATISFACTION SCALE.....	208
APPENDIX 2. LETTER OF INFORMATION AND CONSENT	209
APPENDIX 3. SURVEY QUESTIONNAIRE	211

Chapter 1. Introduction

First, I will address definitional issues and explain what I mean by portfolio entrepreneurs, referred to hereafter as PEs. Section 1.1 will briefly review some existing definitions in the field of entrepreneurship. In Section 1.2, I will first define what I mean by entrepreneurs and then move on to the definition of PEs. Next, in Section 1.3, I will describe the motivations for studying PEs and outline research questions that this dissertation responds to. A preview of the rest of the chapters contained in this dissertation will be given at the end of this chapter.

1.1. Examination of Existing Definitions in the Literature

In extant literature, there exists a wide range of definitions of PEs. Early researchers defined PEs as owners of multiple firms (Hall, 1995; Birley and Westhead, 1993; Wright et al., 1995). Westhead and Wright (1998) proposed a two-by-two categorization of habitual entrepreneurs, with the two dimensions being 1) ownership status and 2) multiple ownership achieved through new startups versus acquisitions. They defined portfolio entrepreneurship as multiple ownership involving new firms without ownership changes between ventures. Some scholars have moved away from defining portfolio entrepreneurship based on multiplicity of enterprises to multiplicity of entrepreneurial interests¹. Carter and Ram (2003) defined PEs as individuals simultaneously owning and engaging in a portfolio of entrepreneurial interests. Wiklund and Shepherd (2008) adopted a similar view and defined portfolio entrepreneurship as “the discovery and exploitation of two or more business opportunities” (p. 703).

¹ Business areas that entrepreneurs find interesting (Carter and Ram, 2003)

One of the reasons why there exist various definitions of portfolio entrepreneurship² is that this phenomenon has been studied in different contexts and looked at from different aspects. Carter (1998), Alsos, Ljunggren and Pettersen (2003) and Alsos (2007) studied the multiple activities farm owners engage in to respond to constraints within the farm sector. Alsos and Carter (2006) explored the extent of resource transfer between farms and the new ventures and the impact of transferring tangible³ vis-à-vis intangible⁴ resources on new venture performance. With this purpose in mind, they defined PEs as owners of multiple businesses.

Iacobucci (2002) and Iacobucci and Rosa (2010) analyzed the critical role of entrepreneurial team⁵ formation on expanding business groups⁶, differentiating the roles and functions of business groups between large and small firm settings. Due to the focus on business groups, they chose to characterize PEs as individuals who own a set of legally distinct businesses, without imposing additional requirements such as financial independence of each venture⁷ or the mode of entry (new startup or acquisition).

Baert and colleagues (2016) explored processes and organizational practices that help firms and individuals achieve sustained entrepreneurship. Focusing on how PEs obtain and leverage resources in a dynamic environment, they followed the definition proposed by Westhead and Wright (1998) and defined PEs as individuals simultaneously holding ownership stakes in two or more independent ventures that were either new, purchased, or inherited.

² Refers to the action of starting and managing multiple businesses simultaneously in this study

³ Physical resources such as buildings and equipment

⁴ Knowledge resources that accrue from experiential learning; organizational resources such as routines, employees and networks of the existing businesses; and financial resources in terms of equity, working capital and capital assets etc.

⁵ Defined as a group of people who share the ownership and management of a new venture (Iacobucci and Rosa, 2010; Cooney, 2005; Kamm and Nurick, 1993; Watson, Ponthieu, and Critelli, 1995)

⁶ Defined as a set of businesses that are legally distinct but belong to the same person or people

⁷ Whether each business can generate its own revenue and remain viable

The previous examples illustrate how the definition proposed was directly mapped to the research questions asked and the context studied. Due to the different contexts of previous studies, the definitions proposed were often tailored towards answering the research question asked about a specific aspect of portfolio entrepreneurship. Using previous definitions without considering their suitability for the current research question is thus not appropriate. Therefore, with the aim of identifying the heterogeneity within PEs, I draw a clear boundary distinguishing PEs from other types of entrepreneurs in order to conduct an in-depth analysis of the focal group. In Section 1.2, I will first outline my definition of entrepreneurs, and then propose a conceptual definition of PEs.

1.2. Definition of Entrepreneurs and PEs

1.2.1 Definition of Entrepreneurs

Before defining what I mean by PEs, I will provide a clear definition of entrepreneurs. Without a consistent definition, it is hard to make meaningful comparisons across studies. Early definitions of entrepreneur can be traced back to Richard Cantillon (c.1680-1734). Cantillon viewed an entrepreneur as a speculator who engages in market exchanges at their own risk for profit-making purposes. They buy at a certain price and sell at an uncertain price (Hebert and Link, 1989; Parker, 2018). The idea of imperfect foresight was further emphasized and explored by Knight (1921), who distinguished between uncertainties and risks. Risk is defined as the case where individuals know the “true” objective distribution from which the values are drawn, yet do not know the outcome of a draw ex ante (Alvarez and Parker, 2009; Foss and Klein, 2005; Knight, 1921). Uncertainty, on the other hand, is defined as the case where an individual knows neither the outcome of the draw nor the true underlying distribution (Alvarez and Parker, 2009).

In Knight's view, the decision to become an entrepreneur is dependent on the relative risk-adjusted returns of entrepreneurship and wage employment (Parker, 2018).

Sharing Knight's view on the importance of risk-bearing, Mill (1984) considered direction, supervision, control, and risk-taking to be functions of the entrepreneur, with risk being the distinguishing feature between the manager and the entrepreneur (Brockhaus, 1987). In contrast to perceiving entrepreneurs as arbitrageurs, Schumpeter (1934) viewed entrepreneurs as individuals whose function is to create new combinations of means of production. Schumpeter believed that one behaves as an entrepreneur when carrying out innovations, emphasizing the role of innovation as the distinguishing feature for entrepreneurs. Innovation is defined quite broadly to include new combinations, such as the introduction of a new product or a new quality of a product, a new method of production, a new supply of inputs, a new market, and the new organization of an industry (Hagedoorn, 1996; Schumpeter, 1934, p. 66; 1939, pp 84-85). A surprising assumption of Schumpeter's definition is that entrepreneurs never bear risks; he argued instead that both managers and entrepreneurs experience risks (Brockhaus, 1987).

Quite the opposite of Schumpeter's view, scope of creativity was not a necessary requirement in Kirzner's definition of entrepreneurs. As opposed to the active and innovative Schumpeterian entrepreneur who creates opportunities, Kirzner viewed entrepreneurs as passive yet "alert" individuals who are capable of discovering hitherto overlooked, exogenously created opportunities (Kirzner, 1999). Although both Kirznerian and Schumpeterian entrepreneurs share some similarities and are not based on fundamentally inconsistent grounds (Kirzner, 2009), the two scholars disagree on the role of innovation in defining entrepreneurs. Furthermore, after extending the original single-period entrepreneur (Kirzner, 1973) to the multiple-period context

(Kirzner, 1981), Kirzner acknowledged the presence of uncertainty, or imperfect foresight, as a key defining feature of entrepreneurial context.

Subsequent scholars have attempted to reconcile various historical themes in defining entrepreneurs. Hebert and Link (1989) provided a synthetic definition, stating that “an entrepreneur is someone who specializes in taking responsibility for and making judgmental decisions that affect the location, form and the use of goods, resources and institutions” (p. 47). This definition also incorporated the multiple functions an entrepreneur performs, namely innovator, decision maker, owner of an enterprise, organizer and coordinator, allocator of resources, and so on.

Aiming to reflect the diverse functions an entrepreneur may have, I propose a synthetic definition based on the following dimensions: new venture creation, innovation, risk bearing, and decision making. *In this study, I define entrepreneurs as individuals who bear the risks and take responsibility for making judgmental decisions with regards to the acquisition, coordination, and integration of resources to establish new ventures and carry out innovations.* Following Schumpeter’s view, I include innovation as a key requirement for an individual to be considered an entrepreneur. Innovation is envisioned broadly to include the adoption of new products or features, services, processes, systems, and markets. On the other hand, unlike Schumpeter’s definition, risk bearing is also included as an important feature of entrepreneurship in this study.

New venture creation is another requirement that needs to be satisfied for one to be considered an entrepreneur in this study. As Gartner (1989) argued, organization creation is what separates entrepreneurship from other disciplines. Gartner (1989) further argued that entrepreneurship ends when the creation stage of the organization ends, sharing Schumpeter’s (1934) view. Although it is debatable at what stage of new venture creation entrepreneurship

ends, I concur that new venture creation should be at the center of the discussion if we want to study the motivation for and process of multiple venture creation. In this study, I define new venture creation as the establishment of an independent legal entity.

The requirement that a new, independent legal entity is created rules out the addition of new product lines or divisions within an existing firm. Unlike Carter and Ram's (2003) and Wiklund and Shepherd's (2008) work, my discussion of PEs will not deal with new business activities, such as the addition of new product lines and new marketing tools, within an existing firm. This is not to say that the discussion on mode of organizing⁸ is not an important aspect of portfolio entrepreneurship. Rather, this research topic warrants a separate, more in-depth investigation, which is beyond the scope of this study.

Nascent entrepreneurs with multiple business ideas are exempted from this study. Nascent entrepreneurs are entrepreneurs at the pre-venture creation stage (Delmar and Davidsson, 2000). As Azjen (1991) argued, intentions to perform behaviors alone does not fully predict actual behaviors. Following the definition provided by Carter, Gartner and Reynolds (1996), business owners are people who have undertaken tangible activities such as (1) seeking and obtaining financial support; (2) purchasing facilities and equipment; and (3) forming a legal entity. Despite the fact that nascent entrepreneurs are an important group to study in order to understand the process leading to the creation of a business (Delmar and Davidsson, 2000; Carter et al., 2003), I intend to focus on business owners who have already registered their legal businesses because having multiple business ideas should not be treated as equivalent to the process of trying to establish multiple businesses.

⁸ Organizing new business activities using a new legal firm, or using an existing firm

The requirement of new venture creation also excludes acquisitions from the current discussion. Although it has been argued that acquiring an existing business is one way of exploiting perceived opportunities and can be entrepreneurial in nature (Lumpkin and Dess, 1996; Garter et al., 1989), acquiring a firm and creating a firm from scratch may differ in terms of the level of innovation and risks involved. The creation of a venture often involves new value being created, new needs being served, and new approaches being introduced (Morris, 2015). In this sense, new ventures are often more innovative than acquired ventures. In fact, as Morris, Kuratko and Schindehutte (2012) argued, the experience of venture creation is a shaping experience through which the entrepreneur emerges and continues to be formed by the novel, idiosyncratic, and experiential nature of the process. Founding a firm from scratch has been regarded as involving the highest degree of entrepreneurship (Verheul, Uhlaner and Thurik, 2005) and is therefore the focus in this study.

To reflect the idea of risk bearing, I include having ownership stake as a key requirement for someone to be considered an entrepreneur in this study. As Demsetz (1967) stated in his seminal piece on property rights, “this concentration of benefits and costs on owners creates incentive to utilize resources more efficiently” (p. 356). Having ownership stake ensures that entrepreneurs take the risks of losing personal wealth if the new venture fails. Ownership rights make the entrepreneur the bearer of risks and give the entrepreneur the decision power to coordinate scarce resources (Hawley, 1907). The importance of ownership has been illustrated by agency theorists; their argument surrounding agency costs is built on the premise that agents pursue their own interests rather than the best interests of the principals (owners of the firm) (Jensen and Meckling, 1976; Fama and Jensen, 1983). Therefore, to ensure no divergence

between the entrepreneurs' personal interests and the best interests of the firm, only entrepreneurs with major or minor ownership stakes are considered.

1.2.2 Conceptual Definition of PEs

As suggested in the brief review of definitions used in prior studies, a widely agreed-upon definition of PEs is lacking. Although it is understandable that definitions are matched closely with specific contexts, a well-specified definition could help enhance the communication among scholars and promote theory building and hypotheses testing surrounding PEs. I provide my own conceptual definition of PEs in the following paragraphs.

One must satisfy the following conditions to be considered a PE in this study: the individual 1) is the founder or co-founder of more than one business simultaneously (new venture creator); 2) has majority or minority ownership stake in the firms he or she founded or co-founded (risk bearer); and 3) actively manages the firms and has the decision-making power in the firms he or she founded or cofounded (decision maker).

The first condition emphasizes the PE's role as a new venture creator. As mentioned in the previous section defining entrepreneurs, nascent entrepreneurs will not be included in the discussion. The condition of simultaneously founding and managing multiple businesses is meant to distinguish PEs from serial entrepreneurs who start multiple businesses sequentially and only focus on one business at a time. Similar to the reasoning provided for including risk bearing in the definition of entrepreneurs, the requirement of ownership stake ensures that the PE is taking risks and assuming responsibility for all the ventures where he or she serves as an owner manager.

Having ownership in more than one venture alone is not enough for the entrepreneur to qualify as a PE. In addition to having ownership stake, active involvement in the management of

the ventures and acting as the decision maker for the ventures are necessary conditions that must be satisfied for the individual to be considered a PE. Therefore, venture capitalists, investors, and sleeping partners are not included in the discussion. Unlike most previous studies on PEs, I exclude sleeping partners and passive investors because their level of involvement in daily management of the firms is low and it is far less challenging for them to be owners of multiple businesses. The motivation behind owning multiple businesses simultaneously is likely to differ between active owners and passive owners because the latter may do it for risk diversification while the former has a much more diverse range of reasons that are more theoretically interesting.

Active management may range from being involved in daily operations of the firms to only making major strategic decisions periodically. Both are considered active management in this study. For instance, it is likely that the PE is devoting the majority of his or her time to the newest venture while only allocating a small portion of time to making strategic decisions for older, more established ventures. As long as the entrepreneur remains a decision maker for those ventures, he or she satisfies the condition of active management. Due to the prevalence of team ownership in portfolio entrepreneurship (Tihula and Huovinen, 2010; Iacobucci and Rosa, 2010), it is likely that some PEs only play a supportive role in some of their businesses while their cofounders have majority ownership. Both majority and minority ownership stakes are regarded as having ownership rights.

In addition to individual-level conditions, another condition at the firm level must be met for the entrepreneur to be considered a PE. That is, each of the multiple ventures must be a standalone business capable of generating its own income. It is required that each firm is a standalone enterprise and is able to operate without the existence of other firms. In other words,

each firm must be responsible for generating its own revenue to survive rather than relying entirely on the existing ventures the entrepreneur has established. For example, Volkswagen⁹ operates an AutoMuseum, a museum exhibiting historical models of Volkswagen vehicles, and charges admission fees for tours. Because the museum can be fully functional on its own by generating its own streams of revenue, the owners of Volkswagen can be considered PEs. If there were no charge for entry and the standalone museum operated as an advertising branch of Volkswagen, then the establishment of the museum would not be considered a case of portfolio entrepreneurship.

To further illustrate this point, Alibaba.com¹⁰ and its affiliated firm Ant Financial can be seen as a good example of two related ventures with independent operations. Ant Financial manages Alipay, the mobile and online payment system, which can be used on Taobao.com¹¹ and Alibaba.com. In addition, Ant Financial also operates a money-market fund named Yu'e Bao and offers an array of fund management and financial services. The ownership structure of these two firms are completely separate, meaning that Ant Financial is not funded by Alibaba Group and is financially independent. Although it is clear that the two firms have close affiliations, each of them is capable of operating as a separate entity and generating rents independently. This additional condition ensures that cases where one of the PE's businesses is serving as a division for his or her other businesses are excluded from the current study.

⁹ For illustration purposes, I have given well-known, publicly listed companies as examples above. However, in this study, I am interested in studying privately held companies.

¹⁰ Alibaba.com is the primary company of Alibaba Group. It is a business-to-business trading platform.

¹¹ Taobao.com is an online shopping platform established by Alibaba Group. Unlike Alibaba.com's B2B nature, Taobao is a consumer-to-consumer (C2C) trading platform.

1.3. Motivations for Studying PEs

Studying PEs is of theoretical importance. In a review article discussing the focus of entrepreneurship research, Ucbasaran, Westhead and Wright (2001) identified types of entrepreneurs as a major research theme. They argued that by identifying different types of entrepreneurs, scholars can develop greater understanding of the processes and strategies chosen by each entrepreneurial type to grow their ventures. As illustrated by Lafuente and Salas (1989), different types of entrepreneurs may exhibit different behaviors in terms of their management strategies, resulting in different performance profiles for the ventures they created. Thus, it is important to investigate the heterogeneity of entrepreneurs in order to generate behavioral implications associated with each type of entrepreneurs and ultimately explain the performance differences among new ventures.

Insights generated from studying PEs could contribute to the broader literature on entrepreneurship. At some point of their entrepreneurial journey, entrepreneurs who run a single business are likely to face the situation in which they encountered new business opportunities and need to choose between starting a new firm or simply adding a product or service to the existing firm, should they decided to exploit these opportunities (Wiklund and Shepherd, 2008). Understanding the various reasons that give rise to portfolio entrepreneurship, the processes PEs engage in, as well as outcomes of portfolio entrepreneurship will highlight how entrepreneurs can use portfolio entrepreneurship as a growth strategy to achieve sustained growth (Jaskiewicz, Combs, Ketchen and Ireland, 2016).

The field has treated PEs as a homogeneous group while in reality, a wide range of motives for engaging in portfolio entrepreneurship¹² exist (Carter and Ram, 2003; Carter et al.,

¹² The action of starting and managing multiple businesses simultaneously

2004). It is time for us to go beyond representing PEs as a homogeneous group and start exploring the uniqueness of the diverse subpopulations. Exploring the heterogeneity of this group could help us understand differences in entrepreneurial behaviors and strategies and ultimately understand performance differences among PEs. Is there a subgroup of PEs that is particularly effective in starting and running multiple businesses? What makes them more effective than other subgroups of PEs? What strategies or best practices have they used to achieve better entrepreneurial outcomes? Because time is a scarce resource for entrepreneurs (McCarthy, Krueger and Schoenecker, 1990), how do they get around the limited time problem associated with running multiple businesses simultaneously? Exploring the heterogeneity of PEs may help us answer these questions and shed light on the unique challenges PEs face and the creative methods PEs have used to resolve these challenges.

In addition to the theoretical importance mentioned above, PEs are also worth studying from a policy perspective. Extant empirical estimates have indicated that PEs are widespread around the world. The proportion of PEs varies by national contexts. In addition, due to variance in definitions of PEs and sampling strategies, the percentage of PEs often differs in samples collected from the same country. For example, samples collected from Nordic countries showed a high incidence of business owners being PEs. Kolvereid and Bullvag (1993) reported that 31% of a sample of Norwegian firms were owned by PEs. Surveying Norwegian farming households, Alsos and Carter (2006) showed that PEs made up around 20% of their sample¹³.

There is greater variance in the percentages of PEs reported in UK-based studies. Westhead, Ucbasaran, Wright and Binks (2005) found that 24.9% of a British sample of firms involved PEs. This figure is similar to the 29.6% reported by Ucbasaran et al. (2006a, b, 2008b).

¹³ Calculated from information provided in Alsos and Carter (2006).

On the other hand, using a British sample of independent firms, Westhead and Wright (1998a) showed that only 12.1% of responses were from portfolio founders, similar to the 12% reported by Birley and Westhead (1993) (Ucbasaran, Alsos, Westhead and Wright, 2008).

Due to the difficulty in constructing national representative samples of PEs, the true population proportion of PEs is hard to estimate accurately. These sampling challenges will be discussed in detail in Chapter 3. Despite different estimates reported in previous studies, the presence of PEs is significant across countries, ranging from 12% to 40% of the surveyed entrepreneur population. In addition to the fact that PEs are a sizable group, they also tend to have higher wealth creation potential and run businesses that experience faster employment growth (Westhead, Ucbasaran, Wright and Binks, 2005). The extant evidence suggests that this group of entrepreneurs has the potential to make significant contributions to economic development and wealth creation in various national contexts. Studying PEs can offer practical implications for policy makers who attempt to provide support to entrepreneurs that have the greater contribution to national economy in terms of employment and wealth creation and maximize the returns of policy investments in entrepreneurship (Ucbasaran, 2004).

1.4. Preview of the Chapters

In this chapter, after providing my definition of entrepreneur, I proposed a definition of PEs. I briefly discussed why studying PEs could generate implications for both theory building in the field of entrepreneurship and policy making in practice. Extant research on PEs has compared PEs to single business owners who run only one business at a time (Santamaria, 2021; Carbonara, Tran and Santarelli, 2019; Westhead, Ucbasaran and Wright, 2005; Westhead and Wright, 1998). Less attention has been given to the heterogeneity that exists within the population of PEs. In this dissertation, I attempt to fill this gap by approaching the phenomenon

in three steps. First, I attempt to identify a key distinguishing factor that separates PEs into two groups: synergizers and non-synergizers¹⁴. Next, I aim to study how these two groups of PEs behave differently when they make decisions regarding the hiring of top managers in their new ventures. Finally, I relate the differences in their decision making to an entrepreneurial outcome: job satisfaction. The first step tackles the “why” question by describing the key factors that influence one’s selection into the synergizer category over the non-synergizer category. The second step aims to answer the “how” question by describing how these two groups of PEs differ in the way they hire top managers. The third step attempts to answer the “so what” question by discussing the differences in job satisfaction experienced by these two groups of PEs. Following this three-step structure, I aim to not only uncover the presence of different subgroups within PEs, but also compare and contrast the differences in entrepreneurial outcomes among PEs.

The structure of the dissertation will mirror the three-step structure outlined above. Chapter 2 will provide a literature review of extant works on PEs, delineating what we already know about PEs from three aspects: why individuals become PEs, processes PEs engage in, and entrepreneurial outcomes of portfolio entrepreneurship. The literature review will highlight theoretical gaps in the current literature and identify a theoretical perspective that could contribute to our understanding of PEs.

Chapter 3 outlines the overarching research design for conducting the three-step analysis. Having established the conceptual definition in this chapter, the empirical measure of PEs is discussed in Chapter 3 in detail. Chapter 3 describes the methodology I used to collect a qualitative sample and a quantitative sample, both of which will be used to answer the “why”

¹⁴ Synergizers are PEs who create synergies across the multiple businesses they own. Non-synergizers are PEs who run businesses that do not share synergies. The definition of synergy and a detailed description of these two groups will be given in Chapter 4.

question in step 1. More specifically, Chapter 4 provides a summary of findings from the qualitative sample, establishing the distinction between synergizers and non-synergizers. Chapter 5 presents four hypotheses tested using the quantitative sample and highlights factors that encourage individuals to become synergizers rather than non-synergizers. Chapter 6 follows the second and third step and presents findings related to a research question that examines PE's hiring of top managers and its effect on PE's job satisfaction using the quantitative sample.

Chapter 2. Literature Review

In this chapter, I will review the extant literature on portfolio entrepreneurs (PEs). This review will focus on what we already know about PEs, from basic demographic backgrounds to the way they manage the multiple venturing process, and ultimately to outcomes of their entrepreneurial efforts. Tracing how this stream of literature evolves over time, I will start, in section 2.1, with works that explore the differences among different types of entrepreneurs. I will then move on to works that focus specifically on PEs and review the findings related to antecedents, processes, and outcomes of becoming PEs in section 2.2. Finally, because evidence from the qualitative stage of my study (Chapter 4) suggests that synergy is an important dimension to consider in subsequent theoretical development, I will also briefly review how synergy has been studied in previous management and entrepreneurship literature.

2.1. Literature Comparing Novice, Serial and Portfolio Entrepreneurs

Because early research on portfolio entrepreneurship started with the discussion of habitual entrepreneurs and novice entrepreneurs (MacMillan, 1986; Donckels, Dupont and Michel, 1987; Birley and Westhead, 1993; Kolvereid and Bullvag, 1993), this review will start with works comparing novice, serial, and portfolio entrepreneurs that lay the theoretical grounding for later research on PEs. This stream of literature also uncovered some idiosyncratic characteristics of PEs which pointed to directions for subsequent research that focused exclusively on PEs.

Novice entrepreneurs are defined as entrepreneurs who have no previous entrepreneurial experience (Birley and Westhead, 1993). Serial entrepreneurs are defined as entrepreneurs who exit one venture before entering into a subsequent one (Wright, Robbie and Ennew, 1997). PEs are “owners who own more than one business at a time” (Hall, 1995, p. 220). Some literature

refers to habitual entrepreneurs, a category that captures both serial entrepreneurs and PEs (Hall, 1995). In the following subsections, I will review how novice, serial, and portfolio entrepreneurs differ in terms of their demographic backgrounds, entrepreneurial processes, and outcomes of entrepreneurship.

2.1.1. Differentiating Different Types of Entrepreneurs

In other early works, whether the entrepreneur disposes of his or her previous ventures when starting a new venture has been used as the distinguishing criterion among habitual entrepreneurs. Serial entrepreneurs are those who exit from previous ventures whereas PEs are those who retain ownership and control of previous ventures while starting new ones. However, as suggested by Wright, Robbie and Ennew (1997), this classification might be too simplistic. In the real world, the groups of serial entrepreneurs and PEs are not mutually exclusive and it is likely that considerable switching occurs between these two categories because individuals may be serial entrepreneurs and portfolio entrepreneurs at different times in their entrepreneurial journeys. Sarasvathy, Menon and Kuechle (2013) argued that serial entrepreneurs are similar to PEs in the sense that they build a temporal portfolio and achieve the same portfolio diversification as PEs. There exist commonalities between serial entrepreneurs and PEs in terms of how they apply accumulated entrepreneurial experience to new entrepreneurial attempts (Politis, 2005, 2008).

However, there are also theoretical arguments made around the differences between serial entrepreneurs and PEs. From the perspective of occupational choices, for instance, serial entrepreneurs and PEs are argued to differ in terms of their ability to identify and exploit opportunities (Parker, 2014; Carbonara et al., 2019). Because both serial entrepreneurs and PEs

are grouped under the umbrella of habitual entrepreneurs, this review of literature will deal very briefly with habituals and focus mostly on PEs.

Paper by Westhead and Wright (1998) was among the first to examine differences between serial entrepreneurs and PEs empirically¹⁵. In their foundational paper, they compared novice, serial, and portfolio entrepreneurs in terms of demographic background, work experience, reasons leading to start-up, personal attitudes to entrepreneurship, financing sources, and venture performance. They found that compared to serial and novice entrepreneurs, PEs tend to have parents who held managerial positions during the PE's childhood. PEs also typically started their first businesses at a young age and have used customers and suppliers as sources of finance. Compared to novice entrepreneurs, PEs are more likely to have equity partners and more work experience prior to startup. Although their empirical section relied on univariate analysis rather than multivariate analysis, Westhead and Wright (1998) drew attention to the importance of entrepreneurial experience and inspired a series of studies comparing and contrasting novice, serial, and portfolio entrepreneurs.

2.1.2. Entrepreneurial Process

In addition to exploring differences in personal backgrounds and motivations for becoming entrepreneurs, early works have also looked at how novice, serial, and portfolio entrepreneurs differ in the new business gestation process. Understanding the different approaches novice, serial, and portfolio entrepreneurs use during the entrepreneurial process will further clarify if PEs engage in more effective processes when they start businesses, which may help explain the higher number of businesses they establish; this could be considered an outcome

¹⁵ Earlier empirical papers have not made the clear distinction between serial and portfolio entrepreneurs and test differences between these two types of entrepreneurs. For example, Wright, Robbie and Ennew (1997) made the distinction conceptually but did not treat the two groups separately empirically.

of entrepreneurship. Alsos and Kolvereid (1999) argued that compared to novice entrepreneurs, PEs who have multiple sources of income and can afford to “wait and see” may carry out startup activities differently. Using a large-scale survey conducted in Norway, they provided some empirical evidence that PEs are more likely to invest their own money, set up a startup team, receive government funding, and engage in sales promotion activities. PEs were also found to be more patient in initiating many activities, which the authors interpreted as evidence that PEs pursue more complex ideas that require longer periods of development. Having less financial urgency, PEs were found to wait until the end of the gestation process to apply for external funding and they were markedly more likely to form a registered business eventually.

There are competing arguments regarding the extent to which previous entrepreneurial experience is beneficial for serial entrepreneurs and PEs. Scholars have argued that prior entrepreneurial experience has both benefits and costs. Starr and Bygrave (1991) argued that previous experience may have both positive and negative influences—the former includes reputation, expertise, and social networks built in previous venturing efforts, while the latter includes reduced effort level and replicating previous success recipes when the conditions surrounding the new business have changed. Building on this line of argument, Westhead, Ucbasaran and Wright (2005) argued that serial entrepreneurs and PEs may have accumulated different assets and liabilities from previous entrepreneurial experiences due to PEs having equity stakes and decision-making roles in multiple ventures.

Ucbasaran, Westhead and Wright (2009) examined how over-optimism of novice, serial, and portfolio entrepreneurs may be different due to the effect of previous entrepreneurial experiences. Over-optimism was defined as the tendency of people to report that they are less likely than others to experience negative events and more likely than others to experience

positive events. They argued that it is not necessarily the case that those with prior entrepreneurial experience are less likely to be over-optimistic. Rather, they argued that the nature of prior experience determines the level of optimism. Using a sample of 576 entrepreneurs in Great Britain, they found that serial entrepreneurs and PEs are more likely to report over-optimism than novice entrepreneurs if they have not experienced failures. Serial entrepreneurs who have experienced business failures are just as likely to be over-optimistic as novices. The rationale given by the authors was that serial entrepreneurs, compared to PEs, have higher emotional costs and need to remain over-optimistic to balance the sense of vulnerability. On the other hand, PEs who have experienced failures, are less likely to be over-optimistic, suggesting that operating multiple ventures simultaneously reduces the emotional costs associated with a single business failure by diversifying their businesses (Rosa, 1998).

The extant evidence mentioned above suggests that PEs differ from single-business owners (novice and serial entrepreneurs) in the way they develop ideas and set up new businesses, their sense of financial urgency, tendency to be overly optimistic, and engagement in information searching behavior. These cognitive and behavioral differences have been attributed to the conjecture that operating multiple businesses simultaneously reduces the entrepreneur's financial dependence on each individual business and the fact that prior entrepreneurial experience has affected PEs' subsequent venturing behaviors.

2.1.3. Outcomes of Entrepreneurial Ventures

Naturally, we are collectively interested, for policy purposes, in the performance implications for the businesses started by different types of entrepreneurs. If research can demonstrate that PEs' businesses show superior performance to businesses started by novice and serial entrepreneurs, policy makers can tailor regulations and government programs to promote

portfolio entrepreneurship. Overall, extant evidence on performance of the ventures owned by PEs is scarce. Westhead and Wright (1998b) reported that habitual entrepreneurs, PEs in particular, tend to enjoy higher absolute employment growth. Westhead, Ucbasaran and Wright (2003) confirmed the finding regarding absolute employment growth and also found that PEs reported higher percentage growth of sales and full-time employment growth than novice and serial entrepreneurs.

A related outcome variable to performance is business survival. Carbonara et al. (2019) compared the survival length of businesses run by novice, serial, and portfolio entrepreneurs. Defining exits as either shutting down or transferring the business, they found that serial entrepreneurs and PEs tend to run businesses with longer durations. Their findings lend some support to the conjecture that PEs tend to run better quality businesses¹⁶ than novice entrepreneurs. However, the comparison made between portfolio and serial entrepreneurs in terms of their business quality remains a question. Carbonara et al. (2019) did show that compared to serial entrepreneurs, PEs are more motivated to invest heavily in managerial resources, such as the development of managerial expertise among employees, to better absorb knowledge spillovers in new businesses.

Santamaria (2021) showed that compared to single-business owners, PEs are able to make exit decisions faster when receiving negative early market signals. Santamaria (2021) attributed any performance differences between single-business owners and PEs to this selection effect: PEs are more likely to exit (and exit earlier) from underperforming businesses and only the most successful businesses stay alive, raising the overall quality of the surviving businesses. He argued that PEs are not more capable of selecting better opportunities ex ante; rather, they

¹⁶ In terms of features of the business: innovation intensity, share of technical and managerial employees (Carbonara et al., 2019)

have more options to redeploy resources, so they are more willing to close down unpromising new venture experiments sooner than novices.

Innovation is another outcome measure that has been explored in extant research. Robson, Akuetteh, Westhead and Wright (2012) argued that PEs are likely to be more willing to engage in innovative activities. They argued that PEs, compared to novice and serial entrepreneurs, may be better positioned to face failure of the innovation activity in one of their firms because they have a financial safety net created by owning other businesses. In addition, they argued that PEs may recognize the need to foster innovation across the board, and due to prior resource accumulation, they are better able to reduce resource barriers associated with innovation activities, compared to novice entrepreneurs. Their empirical findings suggested that PEs are significantly more likely than novices to report having tried innovation in one of the seven specified areas relating to product and process innovations. Based on their empirical findings, Robson et al. (2012) inferred that PEs may have acquired more resources and learned more from their prior entrepreneurial experiences than serial entrepreneurs because innovations introduced by PEs tend to be more successful.

As shown in the discussion of outcome measures, there is some evidence that businesses owned by PEs enjoy higher growth in sales and absolute employment growth and survive a longer duration. In addition, PEs tend to make faster exit decisions after receiving negative market signals and are more likely to engage in innovative activities. More empirical studies are needed to reach conclusions about the quality of businesses run by PEs.

2.2. Review of Literature on PE

The next section will review previous works that specifically focus on PEs. I start with works that examine the antecedents of portfolio entrepreneurship at the individual,

entrepreneurial team as well as industry level. Starting with the antecedents will help answer the “why” question and delineate different motives PEs have. These motives may then shape PEs’ decision-making in the entrepreneurial process. Then I will move on to discuss how previous works have looked at the entrepreneurial processes in which PEs engage. The different choices made during the entrepreneurial process will likely lead to different entrepreneurial outcomes. Lastly, I finish this section with a review of the outcome variables associated with portfolio entrepreneurship previous works have examined. Table 2.1 below summarizes the methodologies used and basic sample characteristics in the qualitative works mentioned in this review.

Table 2.1. Qualitative Studies on Portfolio Entrepreneurs in Peer-reviewed Journals

	Country	Methodology	Types of data collected	Number of PE studied	Number of businesses studied (Legal entities)
Rosa (1998)	UK	Analysis of business life histories; multiple case studies	Interviews Secondary data sources	23	Not available
Alsos, Ljunggren, and Pettersen (2003)	Norway	Multiple case studies	Interviews	16	Not available
McGaughey (2007)	Australia	Real-time and retrospective longitudinal study	Archival data, field observation, interviews with entrepreneurs and employees, company documents, publicly	3	11

			accessible reports		
Huovinen and Tihula (2008)	Finland	Single case study	Interviews and press cuttings	1	5
Lechner and Leyronas (2009)	France	Multiple case studies (extreme cases)	Interviews with founders and cofounders; company press releases	3	22
Iacobucci and Rosa (2010)	Italy	Multiple case studies	In-depth interviews of retrospective insights	14	74
Sieger, Zellweger, Nason and Clinton (2011)	Ireland, Chile, Guatemala, France	Longitudinal case studies. The authors sampled four cases out of the STEP case pool from multiple countries.	Interviews, secondary data gathered from websites, annual reports, press articles etc.	4	31
Akhter, Sieger and Chirico (2016)	Pakistan	Multiple case studies	Field observations, interviews, internal documents, phone calls, websites	6	49
Baert, Meuleman, Debruyne and Wright (2016)	Belgium	Longitudinal single-case study (2006-2013)	Interviews and Archival data	1	9

2.2.1. Antecedents of PE

The following subsections will review works that have examined different antecedents of portfolio entrepreneurship. Specifically, the antecedents are organized into personal level, team level, and industry level categories.

2.2.1.1. Personal-level Antecedents

This subsection reviews prior studies that have identified key personal level factors that contribute to the individual's decision to become a PE. A key personal level characteristic is the individual's ability¹⁷ to recognize and exploit opportunities. I follow a previous definition and define opportunity as "imprecisely-defined market need, or under-employed resources or capabilities" (Ardichvili et al., 2003; Kirzner, 1997). Recognition ability refers to one's "alertness to new possibilities that emerge in response to exogenous changes in technology, consumer preferences, or some other external factors" (Parker, 2014, p.888; Kirzner, 1973). Exploitation¹⁸ ability is defined as the effectiveness with which individuals exploit opportunities. A sub-stream in the occupational choice literature has helped explain why certain individuals become PEs rather than serial entrepreneurs. Parker (2014) argued that individuals who possess superior opportunity recognition and exploitation abilities become PEs while those with high recognition but low exploitation abilities become serial entrepreneurs. Parker (2014) further argued that entrepreneurs who recognize diversifying opportunities, or a sequence of opportunities whose returns covary negatively, are more likely to become PEs. In addition, the presence of synergies across businesses and a moderate level of risk aversion also promote portfolio entrepreneurship. It is shown formally that individuals with the highest level of risk

¹⁷ Talent for managing a business (Lucas, 1978)

¹⁸ The process of managing and developing a venture opportunity in order to extract its value (Parker, 2014).

aversion will choose to remain novice entrepreneurs, while those with the lowest level of risk aversion are likely to become serial entrepreneurs.

In the discussion of how positive synergies are related to the choice of becoming a PE, Parker (2014) drew attention to the quality of the first opportunity, which is a key boundary condition. Under the assumption that there is a finite amount of entrepreneurial effort to allocate to opportunities entrepreneurs exploit, it is proposed that only when the first opportunity is not too valuable will positive synergies between the first and subsequent opportunities lead to portfolio entrepreneurship. If the first opportunity is too valuable, the entrepreneur will continue to focus exclusively on it. The allocation of entrepreneurial effort between the initial opportunity and a subsequent opportunity differentiates portfolio entrepreneurs from novice and serial entrepreneurs. When all entrepreneurial effort is allocated to the initial opportunity, the individual remains a novice entrepreneur and when all entrepreneurial effort is allocated to the second opportunity, the individual becomes a serial entrepreneur. Portfolio entrepreneurs are individuals who allocate their entrepreneurial effort to both opportunities.

Extending this notion that the quality of the initial opportunity matters in the decision to become a PE, Carbonara, Tran and Saltarello (2019) examined how entrepreneurial skills¹⁹ and quality of the current business together affect the choice among novice, serial, and portfolio entrepreneurship. Their theoretical model suggested that serial entrepreneurs are the highest skilled individuals and PEs are low to medium-skilled individuals who invest in new opportunities to combat decreasing returns in their existing businesses. Testing their hypotheses using a dataset from Vietnam, they found that higher entrepreneurial skills lead to habitual entrepreneurship and habitual entrepreneurs tend to possess higher levels of human capital.

¹⁹ Often proxied by personal characteristics of the entrepreneur: education, industry experience, managerial experience (Carbonara et al., 2019)

Human capital refers to skills and knowledge that individuals acquire through investments in schooling, on-the-job training, and other types of experience (Becker, 1964). They found that an increase in the quality of the new business increases the likelihood that it is run by a habitual entrepreneur; the effect is particularly strong for PEs. These results suggest that PEs are likely to possess superior skills related to recognizing and exploiting new opportunities, compared to single-business owners.

However, Ucbasaran, Westhead and Wright (2009) found that although the quality²⁰ of the latest opportunity exploited increases with entrepreneurial experience, the relationship between prior entrepreneurial experience and the number of opportunities identified is inverse U-shaped. Santamaria (2021) also found that firms run by PEs are not necessarily of better quality than those run by single-business entrepreneurs. He showed that there is no significant difference in mean revenue reported by businesses run by PEs and single-business entrepreneurs in the early years. He argued that PEs have a lower entry threshold than single-business entrepreneurs and that PEs are not better at identifying opportunities, but better at making faster exit decisions when facing negative market reaction. Taken together, extant evidence on entrepreneurs' ability to recognize and exploit opportunities remains mixed.

Apart from one's abilities and the quality of the business, financial circumstances of the entrepreneur might also influence whether a new business will be added. If one's financial situation worsens, it is likely that they latch onto any opportunities that generate income within a short period of time, as evidenced by cases studied by Rosa and Scott (1999). Rosa and Scott (1999) showed that in less favorable economic conditions, entrepreneurs stop diversifying. In urgent situations, they pursued survivalist diversification out of desperation, which often

²⁰ Measured as innovativeness of the opportunity, using a scale developed by Manimala (1992)

involved unrelated diversification, defined as “where the new business (created or acquired) has no continuity or links with previous ones” (Rosa and Scott, 1999, page 531). Financial circumstances may become an especially relevant factor in determining one’s selection into portfolio entrepreneurship in an environment where formal financial institutions are underdeveloped. As suggested by Smallbone and Welter (2001), serial and portfolio entrepreneurship are one way that individuals can accumulate financial resources to overcome the lack of financing from formal financial institutions. Thus, financial circumstances are likely to influence whether one becomes a PE and the extent of diversification one pursues.

In addition to the economic aspects mentioned above, non-economic reasons could also contribute to one’s decision to become a PE. A recent paper by Thorgren and Wincent (2015) studied the role passion plays in the entrepreneurial process. Distinguishing two types of passion, harmonious passion²¹ and obsessive passion²², they found that compared to novice entrepreneurs, PEs are more prone to exhibit harmonious passion. They argued that PEs enjoy a greater level of autonomy and higher chances of doing things by free will, both of which facilitate harmonious passion. Because the relationship between passion and portfolio entrepreneurship has not yet been explored, this paper provided some preliminary findings that certain aspects of passion and the desire for autonomy could be related to one’s decision to become a PE. Given the scarce amount of evidence, however, the relationship remains unclear at the moment.

The extant literature has found mixed evidence on the research question, “Do those with higher opportunity identification and exploitation abilities become PEs?” It is unclear whether

²¹ Originates from engaging in an activity built entirely on free will and flexibility, without feeling any external pressure (Thorgren and Wincent, 2015; Deci and Ryan, 2000).

²² Although the individual enjoys the activity and has positive feelings toward it, pressure to engage in the activity is attached (Thorgren and Wincent, 2015; Deci and Ryan, 2000)

PEs are indeed more capable of identifying more and better-quality opportunities. Financial situations entrepreneurs face may also push them into starting multiple businesses as a way to accumulate financial capital. Finally, certain aspects of passion may also affect individuals' decisions to become PEs.

2.2.1.2. Team-level Antecedents

Works reviewed so far have focused on individual-level reasons for individuals to become PEs. Some previous works have also looked at how team-level factors play a role in this decision. When the level of analysis changes from individuals to teams, the act of starting multiple ventures happens as a result of a group decision. The decision maker thus becomes the team. Unpacking how the decision to form a portfolio of firms is likely to paint a more realistic picture of portfolio entrepreneurship because entrepreneurial teams have been shown to be ubiquitous (Lechler, 2001).

Iacobucci and Rosa (2010) used business groups as a context to see how the formation of business portfolios is motivated by team dynamics. A business group refers to a set of businesses that are legally distinct but belong to the same person or people (Iacobucci and Rosa, 2010). The authors argued that diversification is a necessary but not sufficient condition for the formation of a business group and emphasized the fact that setting up a new business enables the entrepreneur to change the ownership structure of the newly added business. They provided qualitative evidence that PEs grant ownership stakes of the new business to other entrepreneurs, vital employees, and “intrapreneurial employees” (employees who came up with the idea of the new business) in order to involve them in the management of the new firm. Overall, they argued that the development of an entrepreneurial team to exploit opportunities is the main reason for organizing the new venture as a separate legal entity. Iacobucci and Rosa (2005) also argued that

business groups are formed as a result of dynamic entrepreneurial growth processes, rather than managerial tools to achieve optimal efficiency.

Similar to Iacobucci and Rosa's approach, Lechner, Kirschenhofer and Dowling (2016) also studied how the formation of business groups is influenced by the PE's social capital. They defined social capital as "resources embedded in a social structure which are accessed and/or mobilized in purposive action" (Lin 1999, p.35). Their examination of four cases²³ showed that PEs tend to be exposed to more opportunities through their social networks and only engage in projects of which they have some understanding. They tend to be more conscious of the role played by themselves and by their partners. In contrast, serial entrepreneurs studied had to actively search for opportunities. This difference in exposure to future opportunities is due to a PE having stronger social capital and a reputation for being a permanent entrepreneur who is seen to be constantly on the lookout for opportunities. In contrast, serial entrepreneurs only participate in one project at a time and may have long breaks between projects and are thus seen as less permanent entrepreneurs. Overall, their findings support Iacobucci and Rosa's argument that new businesses are established as a result of future partners bringing ideas to PEs.

Rautiainen (2012) showed that in a family business context, the decision to develop a portfolio is influenced by social relations of the controlling family. More specifically, the controlling family may decide to expand the original business while founding new businesses with other family members or joint businesses with non-family members. This finding echoes the previous findings by Mulholland (1997) and Ram (1994) that in the family business context, the establishment of additional businesses was often meant to provide employment and career paths for family members.

²³ Two serial entrepreneurs and two portfolio entrepreneurs

As suggested by the team-level research reviewed above, the formation of a portfolio of businesses is often the result of founding additional businesses with existing employees, other entrepreneurs, and family members. The importance of social relations is highlighted in this stream of literature because new business ideas often come from the controlling family's internal and external social connections. The difference between serial entrepreneurs and PEs can also be partially explained by the fact that PEs may have wider business networks (Lechner, Kirschenhofer and Dowling, 2016). Finally, due to the complexity of studying team-level dynamics, only qualitative evidence is available.

2.2.1.3. Industry-level Antecedents

In addition to individual and team level factors, previous research has shown that in certain industries, PEs are particularly prevalent. Researchers have studied portfolio entrepreneurship in the farming context because farmers often combine agriculture with income from other business ownership, a strategy for rural development and enhancing value creation from the farm sector (Alsos and Carter, 2006; Alsos, Ljunggren and Pettersen, 2003; Alsos, Carter, Ljunggren and Welter, 2011). Many farmers choose to start an additional enterprise for diversification purposes (Alsos and Carter, 2006; Djurfeldt and Waldenstrom, 1999; Kaikkonen, 2005). It is estimated that 60% of farm owners combine agricultural production with other income-generating activities (Carter, 1998; Bryden et al., 1992). Surveying 296 farms in the UK, Carter (1998) categorized three types of diversification effort: diversifying from farming into non-traditional agricultural or quasi-agricultural activities (type 1); additional businesses located on-farm and off-farm (type 2); leasing of farm premises to external businesses (type 3). Farm-centered diversification (type 1) is seen as a relatively inexpensive way to reduce risks through converting existing resources into new businesses. Reaching a point of maturity and scale, these

new activities may become registered businesses (type 2). The main reason for starting an off-farm business was the exploitation of a market demand. Another reason often cited was that new businesses were started to provide sufficient income to enable the owner to remain in farming. Finally, the availability of physical assets, such as land and buildings, gives rise to starting additional businesses (type 3).

As shown above, industry-level characteristics could contribute to farming households' decisions to start multiple businesses in farming related and unrelated industries. Some characteristics are specific to the farming industry, such as the availability of land and buildings and high levels of uncertainty associated with farming activities. Researchers have also investigated how diversifying into farming and non-farming industries affects resource transfer across businesses. As shown in Alsos and Carter (2006), the amount of resource transfer across multiple businesses run by the same household depends on how closely related the original business and subsequent businesses are. To discuss processes such as transfer of resources further, I will review which process-related constructs have been explored in extant literature on portfolio entrepreneurship in the next section.

2.2.2. Process-related Constructs

During the entrepreneurial process of starting and managing multiple businesses, entrepreneurs are constantly making decisions regarding the strategic direction of each individual business as well as strategies pursued at the portfolio level. In this section, I will focus on two important decisions PEs often encounter: 1) resource sharing across businesses and 2) organizational structure of the portfolio. These two decisions are likely to have an effect on performance variables (Baert, Meuleman, Debruyne and Wright, 2006) and other strategic decisions (Iacobucci, 2002).

2.2.2.1. Resource Sharing

One key difference between serial entrepreneurs and PEs is that the latter can engage in resource transferring among various businesses. The resources transferred could be tangible (for instance, physical or financial assets) or intangible (for instance, knowledge, experience, and social capital). Looking at the type of resources transferred from the original firm to new ventures, Alsos and Carter (2006) found extensive transfer of physical resources, such as the use of farm office premises. They also found that among the knowledge-based resources, knowledge related to financial management, general business operations, and financing are most frequently transferred to the new venture. As the relatedness of the original and the new venture increases, the extent of resource transfer also increases.

In addition to sharing tangible resources, PEs can also facilitate the acquisition of legitimacy of newly added ventures (McGaughey, 2007). McGaughey showed evidence that when legitimacy erosion of one venture happened, there was “legitimacy spillover” to other businesses in the same portfolio. Such negative spillovers affected stakeholders’ assessments of newer ventures and led to questioning of validity of information provided by the new venture (McGaughey, 2007).

PEs may also transfer knowledge, routines, and other intangible resources across businesses. Baert et al. (2016) looked at how PEs engage in the processes of structuring a variety of resources, bundling resources to build capabilities, and leveraging capabilities to create value (Sirmon et al., 2007). In particular, they assume that firms have the goal of balancing between exploitation and exploration (March, 1991) and that entrepreneurial firms tend to face limited sets of resources. Combining complementary resources at the portfolio level to realize synergies is argued to be the mechanism that helps alleviate these constraints.

In addition, Baert et al. (2016) also found that PEs diffuse working rules and routines through documenting and archiving information with the intent to share the information across all ventures in the portfolio. Through the development of support systems and other fungible resources and capabilities with the intention to share them across ventures, the entrepreneur can more easily diffuse these resources and capabilities and redeploy them by adapting to the needs of the other ventures. They further showed that existing businesses can serve as incubators for new business ideas, and that entrepreneurs first engaged in supporting and testing configurations of resources from existing ventures before setting up new businesses. Only when a new business idea has proven to have enough potential, does the entrepreneur decouple it from its supporting firm. They showed that entrepreneurs align the resources and processes with the new business's stage of development. When ventures are underperforming, entrepreneurs engage in processes of releasing resources and capabilities tied up in the underperforming venture and redeploying them in other businesses. When an entrepreneur clearly aims to create synergies, support systems are adapted to facilitate the transfer of common resources, such as customer portfolios and existing technologies.

Based on current findings, the extent of resource sharing across businesses owned by the same entrepreneur is influenced by the relatedness of the original business and newly added businesses (Alsos and Carter, 2006) and the setting-up of support systems which could enable resource sharing (Baert et al., 2016). Types of resources shared include tangible resources and intangible resources, such as knowledge, experience, and legitimacy. Because current research on resource sharing across businesses in a PE's portfolio mostly relies on qualitative approaches, the use of quantitative approaches could help provide evidence on the performance implications

of these decisions by comparing and contrasting PEs who differ in terms of allocating, transferring, and recombining resources at the portfolio level.

2.2.2.2. Organizational Structures

Another important process-related decision is the structure chosen by the PE to organize his/her businesses. Smaller firms are tax-favored in certain countries (Holtz-Eakin, 1995) and many countries provide subsidies that target small firms (Meuleman and De Maeseneire, 2012). Although it is common that some PEs establish new legal entities due to the incentives provided by the institutional frameworks (e.g., tax benefits and subsidies), such choices are less interesting theoretically because the rationale behind these decisions is straightforward. Thus, I will focus on theories put forth by scholars to explain why additional opportunities are exploited in the existing firm vis-a-vis in a new firm. Wright, Robbie and Ennew (1997) differentiated portfolio and serial entrepreneurs based on whether there are ownership changes between ventures. Those who retained ownership stake in their previous ventures are classified as PEs while those who disposed of previous ventures are classified as serial entrepreneurs. In addition, those who exploit multiple opportunities in the same firm are classified as engaging in multiple corporate entrepreneurship while others that have created new ventures to exploit multiple opportunities are considered to be PEs. In addition to exploiting opportunities either within or outside the existing firm, they also identified the third possibility where the entrepreneur engages in renewal and transformation of existing firms and introduces major changes to marketing, distribution, operations, and so on for new opportunities. Although they have not delineated the implications of choosing different structures to exploit additional opportunities, they alluded that different organizational structures may have differential effects on how resources are deployed, shared, and transferred.

Iacobucci (2002) argued that there are two important advantages for exploiting new opportunities in a new business rather than setting up new business units within existing businesses. First, a new legal entity allows autonomy to set up the incentive structure to motivate the new management team. More specifically, PEs can grant ownership stakes in the companies for which the managers have specific responsibility. Second, setting up a new firm also allows for contractual autonomy with suppliers. Each company has the freedom to adapt its contractual relationships with customers and suppliers to its specific needs.

Lechner and Leyronas (2009) provided another reason why some PEs prefer to run a number of small businesses as opposed to setting up a divisional structure with all activities organized under one firm. They argued that a portfolio of businesses can be understood as the small firm's alternative to the large firms' divisional structure with the key difference that the individual businesses are allowed to specialize in specific areas and the structure of organization remains less formalized. They proposed that entrepreneurs who lack management experience could replicate a structure they know how to manage, resulting in the formation of several small businesses rather than a formalized, centralized organizational structure. While using a portfolio structure allows the businesses to stay small and less formalized, it also allows for newer businesses within the portfolio to benefit from the reputation and social networks of the more established businesses.

Wiklund and Shepherd (2008) further theorized about the conditions under which PEs choose to exploit new opportunities using a new firm vis-a-vis an existing firm. In their paper, portfolio entrepreneurship was defined as "the discovery and exploitation of two or more opportunities" (p.703). Exploiting opportunities in a new venture was seen as more challenging than exploiting the opportunity within the established venture. Thus, they argued that with higher

levels of human capital (prior experience), habitual founders are more likely to establish an independent firm as the organizing mode to exploit multiple opportunities. They also argued that more business networks and more links to government support agencies both lead to portfolio entrepreneurship. Using data collected through mail questionnaires and a final sample that included 2253 firms, they showed that with more human capital and social links, experienced entrepreneurs are more likely than novices to enter portfolio entrepreneurship. These findings show that organizational choices made by PEs to exploit new opportunities are influenced by the entrepreneur's level of human capital and social capital.

Organizational structures are likely to influence how resources are allocated and transferred among the businesses in the same portfolio. For instance, Iacobucci (2002) showed that Italian family businesses tend to operate their portfolios similar to a multidivisional company, managing financial resources at the portfolio level and significantly limiting the operative autonomy enjoyed by each individual business to facilitate coordination among businesses. Thus, the choice of organizational structure and how resources are channeled among businesses may be jointly determined.

A number of reasons why PEs choose to organize new business opportunities using a new legal entity have been identified in prior works. A new business has the freedom to establish new incentive structures and form new contractual relations externally. Establishing a new business also enables entrepreneurs who have limited managerial experience to work with an organizational form with which they are familiar. On the other hand, those with more human and social capital are likely to exploit new opportunities by establishing new firms. The choice of organizing mode of new business opportunities is likely to affect how resources are allocated and

shared across businesses and have an impact on entrepreneurial outcomes; however, more empirical evidence is needed to draw conclusions in this regard.

2.2.3. Outcomes of Portfolio Entrepreneurship

In this section, I will review three outcome variables examined by prior works, namely experimentation of ideas, sustained growth, and business exits. Because findings related to comparisons made across novice, serial, and portfolio entrepreneurs have been summarized in Section 2.1.3., this section will deal with literature that specifically focuses on PEs.

In extant literature, portfolio entrepreneurship has been identified as a way to allow for experimentation of ideas, which may later turn into new ventures (Robson et al., 2012; Baert et al., 2016). McGaughey (2007) argued that a portfolio approach provides a haven in which experimentation is protected (Orton and Weick, 1990). The creation of a separate legal entity allows the new venture to not be constrained by co-investors in other ventures in the same portfolio and thus helps avoid scrutiny of the new venture's operation by those not part of that venture (McGaughey, 2007). Robson et al. (2012) found evidence that through accumulating resources in prior startup activities, PEs tend to value the potential benefits of innovation and are able to overcome resource barriers of innovation. Meanwhile, Robson et al., (2012) argued that PEs may be less risk averse when engaging in innovations because they have the option to fall back on other income-generating ventures if the experimentation fails. Similarly, Baert et al. (2016) argued that existing ventures often provide a safe environment for incubating new ideas and PEs can choose to only commit a significant amount of investment when the idea has shown some successful results.

Some scholars have argued that portfolio entrepreneurship is one mechanism through which enduring growth can be achieved (Jaskiewicz, Combs, Ketchen and Ireland, 2016; Rosa

and Scott, 1999). Baert et al. (2016) attributed the high growth enjoyed by the PE studied to “the continuing generation of entrepreneurial opportunities to be complemented by the development of synergies across the portfolio of ventures for those new opportunities to be explored and exploited” (p. 366). They further examined how certain processes can better facilitate exploitation while others can better support exploration of opportunities. For instance, they showed that the PE’s engagement in the process of sharing existing resources can help facilitate both the exploration and exploitation of opportunities, while the process of transforming²⁴ is better suited for supporting the exploration of opportunities because exploring new domains requires the development of an entirely new configuration of resources. However, the problem with these implications is that they may be special cases. In Baert et al. (2016)’s case, the argument is built around how portfolio entrepreneurship facilitates exploration and exploitation of opportunities, rather than growth itself. The impact of resource sharing on portfolio growth is therefore not examined directly. To make causal claims about the effect portfolio entrepreneurship has on portfolio growth, more quantitative studies with large samples are needed.

When pursuing growth at the portfolio level, it becomes inevitable that some underperforming businesses are dropped. There has been limited attention to how PEs make decisions regarding the elimination of individual businesses from existing portfolios. Akhter, Sieger and Chirico’s (2016) work is an exception. They conducted a qualitative study on how such exit decisions are made in the context of family firms. They showed that when facing declining performance of a business in their portfolio, the owning family often prefers shutting

²⁴ Defined as “nurturing and converting self-sufficient resource and capability configurations into independent ventures” (p.356)

down to selling the underperforming business, especially when the underperforming business has a strong identity fit with the family. Identity refers to the groups to which one belongs and arises because individuals classify themselves and others into social categories (Akhter et al., 2016; Turner et al., 1987). Identity fit increases when the business in question improves the holding family's sense of attachment and belongingness to particular social groups. In addition, if resources can be easily redirected to other businesses in their portfolio, or if the likelihood of restarting the failing business is high, the family is more likely to shut down the business instead of selling it.

Akhter, Sieger and Chirico (2016) showed that whether resources can be easily transferred to other businesses owned by the PE affects exits. Santamaria (2021) made a similar argument and showed that investment liquidation difficulty, or the difficulty of reselling the company's resources on the market, affects exit timing and portfolio-level performance. The relative advantage of developing a portfolio of businesses therefore lies in the fact that PEs are able to redeploy resources of the underperforming businesses in other businesses and make quicker exits.

Overall, there is limited quantitative evidence of outcomes of portfolio entrepreneurship and this is an area of investigation that offers future research opportunities. Because many of the exploratory studies reviewed here are qualitative studies, a quantitative sample constructed using survey questionnaires may capture the magnitude of the effect of antecedents and process-related decisions on performance measures at the individual, business, and portfolio levels. In addition, as shown in Table 2.2 below, most works examined so far used well-developed western countries as the institutional context. More evidence from developing nations could also generate new

insights on antecedents, processes, and outcomes of portfolio entrepreneurship in different institutional frameworks.

2.3. Review of Quantitative Data Collection on Portfolio Entrepreneurs

As will be discussed in detail in Chapter 3, my research design starts with a qualitative study and finishes with a quantitative sample collected using a survey questionnaire. Given that survey is employed as a main tool for collecting data in this study, I will give an overview of how previous studies collected quantitative data on PEs and discuss some limitations of existing datasets. This overview will provide some reasons for designing and administering my own survey, which will be discussed in detail in Chapter 3. Since most prior quantitative works used survey questionnaires, I will start with studies that used surveys and then discuss studies that used secondary data sources. The secondary data usually came from national business registers and were collected by government agencies rather than the researchers themselves.

Table 2.2. Summary of Data Collected Using Surveys from Studies on Portfolio Entrepreneurs²⁵

²⁵ This table summarizes surveys used in papers published in peer-reviewed entrepreneurship journals. Only studies that clearly differentiated between serial and portfolio entrepreneurs are included. A few quantitative papers that used secondary data, i.e., data collected by government agencies rather than the researchers, these studies are not included in this table and will be discussed in Section 2.3.2.

Paper	Country	How data are collected	Sample size (# of firms)	# of PEs	Limitation of data
Kolvereid and Bullvag (1993)	Norway	Mail survey	# firms not available; # of entrepreneurs: 209	77	-Survey responses relied on entrepreneurs' memory, which may limit the accuracy of answers to questions related to operations in early years -Cross-sectional data
Alsos and Kolvereid (1998)	Norway	Phone survey	# firms not available; # of entrepreneurs: 159	25	-Nascent entrepreneurs are included; -Small number of PEs -Only 2 out of 25 are female PEs
Westhead and Wright (1998a, 1998c)	UK	Mail survey	557	75	-Not a nationally representative sample -Cross-sectional data -Response rate was low, and was likely to be lower in service industries -Sample is subject to survival bias -Respondents may exhibit recall bias as the survey is retrospective -Only the principal founder was surveyed when many firms were founded by teams
Rosa and Scott (1999)	UK	Mail survey	Sample using the Dun and Bradstreet database (sample 1): 1499 Sample using the survey (Sample 2): # firm not available; 600 owner	1643 for Sample 1 560 for Sample 2 76 for Sample 3	-Portfolio entrepreneurship was operationalized as multiple directorships -Cross-sectional data -The survey is only based on 3 sectors, not a stratified sample

				managers were surveyed		
				Sample using the Scottish Enterprise database (Sample 3): 209		
Pasanen (2003)	Finland	Mail survey	100	40	-Only entrepreneurs in Eastern Finland were surveyed. -Only successful, high-growth firms were included	
Westhead, Ucbasaran and Wright (2005a, 2005b); Westhead, Ucbasaran, Wright and Binks (2005)	UK	Mail survey	354	88	-Only four industries were selected as the basis for the sampling frame	
Alsos and Carter (2006)	Norway	Mail survey	207	207	-Results may not generalize to non-farming sectors	
Wiklund and Shepherd (2008)	Sweden	Mail survey	2,253	371	-Nature of new entry remains unexplored as no information on the characteristics of new entries pursued	
Ucbasaran et al. (2010); Westhead et al. (2009) ²⁶	UK	Mail survey	576	41	-Relatively small number of PEs --Acquired firms are also included as firms owned by PEs. -Only four industries were selected as the basis for the sampling frame	

²⁶ The sampling frame is the same but the variables examined are different from Ucbasaran (2010). As a result, the final sample size is 625 entrepreneurs/firms, of which 192 are portfolio entrepreneurs.

Tihula and Huovinen (2010)	Finland	Mail and online survey	119	39	-No individual-level (such as education, previous entrepreneurial experience etc.) and firm-level (performance data, age of businesses etc.) information was collected -No portfolio-level information or information on firms controlled by the same PE -Only firms in Eastern Finland are included -Firm size was limited to 20-49 employees
Thorgren and Wincent (2015)	Sweden	Mail survey	704	Not available	-No information on the multiple businesses created -Cross-sectional data

2.3.1. Review of Data Collection Using Surveys

Early works on habitual entrepreneurs have relied on samples that included both PEs and serial entrepreneurs without distinguishing these two types. Donckels et al. (1987) sampled multiple business starters, defined as “entrepreneurs who, after having started a first company, set up or participate in the start-up of (an) other firm(s)” (p.48). Rosa (1998) and Birley and Westhead (1993) followed a similar approach in their data collection. The discussion below will examine sampling strategies using the survey questionnaires employed in previous studies to

collect information more specifically about PEs²⁷, rather than habitual entrepreneurs. I focus on studies that explicitly distinguish between serial and portfolio entrepreneurs.

Kolvereid and Bullvag (1993) collected a sample of portfolio and novice entrepreneurs using mail questionnaires. The questionnaires were administered in the UK and Norway. However, specific sampling procedures and sample characteristics of the UK sample were not described in the paper. The Norwegian questionnaires were sent to 1146 entrepreneurs, out of which 250 were completed and returned, resulting in a response rate of 24%. They identified portfolio entrepreneurs by asking, “If you have established/owned another business, what happened to the most recent business?” and retained entrepreneurs who responded that they still owned the business. The final sample consisted of 77 portfolio entrepreneurs.

Westhead and Wright (1998a, 1998c)²⁸ used a dataset that was originally meant to study the effect of spatial variations in business formation to study how PEs differ from novice and serial entrepreneurs in terms of motivation, individual backgrounds, work experiences, attitudes towards entrepreneurship (Westhead and Wright, 1998a), and the differences of these three types of entrepreneurs in rural and urban areas (Westhead and Wright, 1998c). To construct this sample, they selected 12 contrasting regions²⁹ and used regional and borough business directories as the basis for identification of independent businesses. After obtaining a list of 4,914 names and addresses of potential independent new and small businesses, they sent survey

²⁷ Carter (1998) and Carter (1999) also used survey questionnaires, but both studies examined diversification of farms in Cambridgeshire, UK. Although some farms established multiple businesses, many of the farms surveyed engaged in non-entrepreneurial activities, such as leasing farm land and buildings. Taylor (1999) also administered surveys in the UK, Australia, and Malaysia but the process of data collection was not described. Thus, these studies will not be included in the following discussion.

²⁸ This paper uses the same dataset collected in Birley and Westhead (1992).

²⁹ These contrasting regions are: government-designated assisted areas (Birley and Westhead 1992); rural and urban environments (Westhead 1995); areas associated with specialized declining traditional heavy industries, and high concentrations of external ownership, particularly in the manufacturing industry; localities with high personal disposable income and high service new firm formation; and areas with strong and varied enterprise promotion through the activities of enterprise agencies and development agencies (Westhead and Wright, 1998).

questionnaires to the principal owner-managers of each business. The final sample consisted of 557 businesses, of which 75 were owned and managed by PEs.

Alsos and Kolvereid (1998) collaborated with a professional survey institute to collect data on novice, serial, and portfolio entrepreneurs' gestation processes through a telephone survey. The institute engaged in a quite extensive search for both entrepreneurs who have set up businesses and nascent entrepreneurs. Nascent entrepreneurs are individuals who are trying to start an independent business (Delmar and Davidsson, 2000). The small number of observations (25 PEs) could limit the generalizability of their findings. On the positive side, they only included respondents who reported that their proposed business venture was a wholly new business (not acquisition or take-over of an existing business).

Rosa and Scott (1999) used three data sources to study how entrepreneurs use diversification as a growth strategy. First, they relied on the Dun and Bradstreet database to obtain a sample of new firms established from October, 1994 to September, 1995 in Edinburgh. This sample, however, did not contain sole traders and partnerships. In addition, this dataset only had information on directors instead of actual firm owners. As Rosa and Scott (1999) acknowledged in their paper, using multiple directorship to proxy for multiple ownership was questionable. Thus, they resorted to a survey questionnaire and included another 600 entrepreneurs operating in three industries (textiles/clothing; business services; and hotels/catering). Their third data source was the Scottish Enterprise Database, which gave them a non-random sample of 209 entrepreneurs who ran high growth firms in Scotland.

Examining differences between novice and experienced entrepreneurs (including both serial entrepreneurs and PEs), Pasanen (2003) used mail survey questionnaires to collect data from 270 small and medium enterprises (SMEs) in Finland. She used four criteria for sample

selection: 1) less than 250 employees, 2) located in Eastern Finland, 3) evaluated as the most successful SMEs in the industry sectors in the region, and 4) independent companies (rather than subsidiaries of other companies). She further eliminated firms that were managed by hired managers. The final sample contained 40 PEs.

Ucbasaran, Westhead and Wright have collaborated on a number of research projects on PEs. They followed the same approach and collected a multi-faceted dataset that can be used to answer different research questions. They obtained names and addresses of privately-owned independent firms from Dun and Bradstreet using sampling quotas by four broad industry categories and eleven Government Official Regions in the UK in 1999. They sent survey questionnaires to a stratified random sample of 4307 firms in three waves. The key respondent was the principal owner-manager and key decision maker of each firm. They achieved an effective response rate of 14.5%. Depending on the research question, the number of PEs included in the final sample varied. Overall, they obtained relatively large samples of PEs in Westhead, Ucbasaran and Wright (2005a, 2005b, 2009) compared to previous studies.

Looking at multiple firm ownership in the context of farming, Alsos and Carter (2006) constructed a comprehensive dataset of farms that were associated with multiple businesses. They first identified active farms in 2002 using agriculture census data (1999) and obtained a representative sample of 3018 farms located in all regions of Norway to which the postal questionnaires were sent. Because the research question targeted only farms with multiple businesses, the final sample contained 207 observations.

Examining the mode of organization when entrepreneurs exploit an additional opportunity (either using the existing firm or establishing a new firm), Wiklund and Shepherd (2008) collected data on novice and habitual entrepreneurs using mail questionnaires. They first

identified a cohort of entrepreneurs and followed them from 1995 to 2000. They started with all new businesses established in 1994, using data from national registers of taxes and business registrations and reached a proportional stratified sample of 14,000 firms based on three stratification criteria: legal form (sole proprietor, partnership, and incorporation), industry (manufacturing, service, and retail), and geographical location by county. Next, they sent out the first wave of questionnaires in 1995 and a second wave in 1998 to collect information on entrepreneurs themselves and their various lines of businesses, financing, and business performance. In 2000, they sent out the third wave of questionnaires to collect information on subsequent new entry decisions made by the entrepreneurs. Their final sample included 2253 entrepreneurs, among which 908 pursued portfolio entrepreneurship. Finally, they approached a subset of the participants who were pursuing new business activities and conducted phone interviews with them, resulting in an additional 250 cases to be included in their study.

In order to compare the prevalence of a founding team among habitual and novice entrepreneurs, Tihula and Huovinen (2010) used a national register maintained by Blue Book TDC Indexes to identify small firms with 20-49 employees located in Eastern Finland. The responsible persons for the firms sampled were asked to return a questionnaire by mail or by filling in a form on the internet. Thorgren and Wincent (2015) used a similar approach to construct their sample to study how novice, serial, and portfolio entrepreneurs differ in terms of their passion for entrepreneurship. They first identified all limited companies registered in 2008 in Sweden, from which a random sample of 3000 firms was created. They mailed the survey to the main founder or owner of each firm. Although the hypotheses tested centered around portfolio entrepreneurship, the number of PEs included in the sample was not reported and information on multiple businesses created by the same PE is also unreported in the paper.

As shown above, one of the main limitations of the surveys used to construct samples of PEs is that there is no distinction between active portfolio entrepreneurship and passive investment. It is often the case that once entrepreneurs have accumulated enough financial capital, they start investing in or acquiring other firms for investment purposes. In addition to passive investment decisions, PEs could also establish firms for tax reduction or legal purposes. For instance, Rosa (1998) showed that not all new businesses created by PEs are entrepreneurial in nature and sometimes “phantom/ghost” non-trading companies are created. Including these investment-only ventures and phantom businesses could confound the real impact of active portfolio entrepreneurship where the entrepreneur is much more involved in the founding and everyday operations of the multiple businesses.

Another common weakness of previous studies using surveys is that the characteristics of the other businesses owned by portfolio owner-managers were not collected (Westhead and Wright, 1998). As argued by scholars who adopted a qualitative approach to study PEs, it is critical to look at not only the most recent business established, but also the overall pattern of growth at the portfolio level because the businesses developed are closely connected (Iacobucci and Rosa, 2005; Lechner and Leyronas, 2009). Focusing exclusively on the most recent business developed therefore prevents scholars from asking important research questions related to portfolio-level constructs, such as the relationships between a PE’s multiple businesses, resource transfer between businesses, and the entrepreneur’s time allocation, decisions, and so on.

Last but not least, a final weakness in previous studies using surveys is that most large-scale surveys mentioned above were administered prior to 2010 (except Thorgren and Wincent, 2015). In the last decade, entrepreneurship has gained a lot more importance in the global economy compared with the situation in the 1990s and 2000s. It is therefore reasonable to

assume that the phenomenon of portfolio entrepreneurship has also evolved over time and an updated survey might help uncover these new dynamics and patterns.

2.3.2. Review of Data Collection Using Secondary Data

Although using secondary data is relatively rare in studies on PEs, there are a few exceptions. By secondary data, I mean data collected by government agencies or private companies (such as Dun and Bradstreet) rather than the researchers themselves. The reason to differentiate between secondary data and primary data is that researchers are often not involved in the design stage of surveys and they also do not control the sampling procedures. The implication of this characteristic will be discussed at the end of this section. Rosa and Scott (1996) obtained data on directors with ownership in multiple firms from Dun and Bradstreet and examined the incidence of multiple business owners in Scotland. Their sample included 2928 entrepreneurs with multiple directorships. However, multiple directorship may not be equivalent to portfolio entrepreneurship, and without specifying concurrent ownership of multiple firms, it is hard to differentiate between serial entrepreneurs and PEs.

Iacobucci and Rosa's (2005) study also used secondary data. They built a longitudinal sample of 66 entrepreneurial firms by selecting firms that are under the ownership and control of the same founder or founding team. Although the paper did not specify how data were collected, they claimed that multiple data sources were used to obtain both qualitative and quantitative information. One limitation of this sample is that it is unclear whether the founder/founding team still had a significant ownership in the portfolio of companies because no ownership threshold was used as a selection criterion. In addition, this sample was initially built to study "new stars" in the Italian manufacturing sectors and only companies that had a turnover of at least 100

million Euros were included, suggesting that these firms may not be representative of entrepreneurial firms.

Carbonara et al. (2019) took advantage of five waves of surveys conducted by the Danish International Development Agency (DANIDA) in collaboration of the Central Institute for Economic Management in Vietnam. The surveys were carried out in 2002, 2005, 2007, 2009, and 2011 and asked for economic information from the two most recent years, yielding a 10-year panel. The surveys were designed to collect data that represents the entire private sector in Vietnam, including both formally registered businesses as well as household/family businesses that are unregistered. Due to the fact that all private businesses were covered, they were able to trace firms over time. Their final sample consisted of 4508 entrepreneurs, among which 225 were portfolio entrepreneurs.

Santamaria (2021) used data from the business registers of the Italian Chamber of Commerce, which provides official data on all Italian firms, and formed a sample of 5740 firms. He selected 2006 as the base year and identified focal firms that were founded in that year and collected balance sheet data on these firms and other firms³⁰ owned by the same PE from 2007 to 2011. He included firms that were established in 2006 and owned by single-business entrepreneurs as a comparison group. Another study that uses secondary data sources to study both serial entrepreneurs and PEs is Shaw and Sorensen (2019). They used data from Danish registers and constructed a sample covering 2001-2013. Unfortunately, they did not describe their sampling strategy in detail.

The main limitation of using secondary data is that only a limited set of research questions can be studied because register data could not capture more in-depth information about

³⁰ Includes both firms that are concurrently owned and previously owned (having majority stakes)

entrepreneurs' motivation, entrepreneurial processes, and strategies. Researchers often have to make compromises and use proxies for the constructs they want to study, unable to measure the constructs of interest directly (Parker, 2018). Another problem with using secondary data is that the data are often right-censored. When studying constructs related to survival and growth, right-censoring³¹ raises concerns because the true survival time will be greater than the observed value and there could be substantial biases in estimated effects depending on the nature of censoring (Lagakos, 1979).

2.4. Synergy and Portfolio Entrepreneurship

Using a qualitative study for exploratory purposes, I found that synergy is a key concept to examine in order to understand different types of PEs. Synergy is defined as super-additivity in valuation of a combination of multiple businesses in this context (Davis and Thomas, 1993). Due to the importance of the concept of synergy in my subsequent theory development, I provide a brief overview of the literature related to synergy in the following section.

In the general management setting, the literature on synergy is closely related to the discussion of diversification. This is because “resource relatedness”, defined as degree of resource sharing between business units (Hill, Hitt, and Hoskisson, 1992), has been widely recognized as a source of synergy via the realization of economies of scale or scope (Tanriverdi and Venkatraman, 2005). Management scholars have examined the link between resources and diversification decisions (Chatterjee and Wernerfelt, 1991). Chatterjee (1986) identified three types of synergies: operational, collusive, and financial synergy. Operational synergies were argued to be generated from sharing related resources across businesses. Relatedness of

³¹ Occurs when firms are still in operation beyond the point at which the researcher stops the observation

resources is a key assumption for the resource cross-exploitation argument (Li and Greenwood, 2004). As Penrose (1959) argued, when a firm possesses an excess amount of resources, it has the incentive to diversify in order to re-deploy the excess resources (Kor and Mahoney, 2004). Sharing of tangible assets have long been argued to have contributed to the creation of synergies (Teece, 1980; Montgomery and Wernerfelt, 1988; Rumelt, 1984; Seth 1990). In addition to tangible assets, intangible assets, such as technologies (Silverman, 1999), managerial capabilities (Prahalad and Bettis, 1986; Ilinitch and Zeithaml, 1995), human resources (Farjoun, 1994, 1998), marketing and advertising capabilities (Davis, Robinson, Pearce and Park, 1992), and information technology (Tanriverdi, 2005), can also be shared among business units to generate synergies.

In addition to being positively related to synergy, the relatedness of resources has been argued to determine the potential of resource deployment, which ultimately determines how firms make entry and exit decisions (Lieberman, Lee and Folta, 2017). Synergy is argued to affect entry decisions because it increases the total expected profit and allows the firm to be more aggressive in entering new product markets. On top of the positive effect synergy has on entry, however, resource relatedness affects entries and exits through an additional mechanism, resource redeployment. In a multi-business firm (a firm that operates in multiple product markets), exiting from underperforming businesses is made easier due to the possibility that resources can be redeployed in other businesses. The existence of redeployment options also reduces potential sunk costs of the original investment, lowering the profit threshold needed to justify entry. Overall, relatedness of resources is argued to increase the potential of resource redeployment, allowing multi-business firms to be more flexible than single-business firms (Lieberman et al., 2017).

Applying Lieberman et al.'s framework to the entrepreneurship setting, Santamaria (2021) emphasized the role of resource redeployment in his discussion of exit decisions made by entrepreneurs. Instead of looking at resource redeployment among multiple businesses within the same firm, Santamaria looked at resource deployment across multiple firms owned by the same entrepreneur (i.e., the PE). Santamaria linked performance differences between PEs and single-business owners to the redeployment options and provided a novel explanation to the superior performance enjoyed by PEs observed in previous research (Westhead et al., 2005b). This paper, however, did not theorize about synergy and its potential effect on entrepreneurs' exit or entry decisions. Synergy can be viewed as "intra-temporal" economies of scope (contemporaneous sharing of resources) whereas both Lieberman et al. (2017) and Santamaria (2021) focused more on the "inter-temporal" economies of scope (redemption of resources over time). The role of synergy in the context of portfolio entrepreneurship is yet to be explored further.

Conclusion

In this chapter, I provided an overview of extant research on PEs. The conversation about PEs started with comparisons made across novice, serial, and portfolio entrepreneurs and gradually moved to a more specific discussion of PEs in different contexts. Prior works have examined various factors at the personal-level, team-level, and industry-level that encouraged individuals to become portfolio entrepreneurs. In addition, a number of papers have explored process-related constructs and examined how resources are shared, transformed, and recombined between established businesses and newly added businesses within the same portfolio as well as the organizing mode chosen to exploit additional business opportunities. Finally, this review suggests that outcomes of portfolio entrepreneurship have been given less attention so far and existing papers have looked at outcomes such as experimentation of ideas, sustained portfolio

growth, and exits of underperforming businesses. In terms of methodologies, extant literature on portfolio entrepreneurship has relied heavily on qualitative studies; quantitative analyses were only used to look at cross-group differences rather than within-group differences. While the extant qualitative evidence has enabled us to understand the specific processes PEs engaged in to start and manage multiple businesses simultaneously, the effect of these processes on outcomes has not been quantified. In addition, a bigger cross-section of PEs could help us understand within-group differences of PEs. In the next chapter, I will discuss my own data collection effort to address these issues.

Chapter 3. Methodology and Sample Construction

In this chapter, I discuss the research methods of my study, including research design, sampling method, variables included in the data analysis, and the main econometric method used to test the hypotheses. In order to gain an in-depth understanding of how PEs start and manage multiple businesses in China, an exploratory, mixed method study was deemed suitable. This chapter describes the rationale for this choice of method and summarizes how the qualitative and quantitative data were collected. Following the order of data collection, I start with the qualitative sample and describe how interviewees were selected and interviewed. Next, I describe how the quantitative sample was constructed by outlining the sampling procedure, survey design, and an attempt to construct a multivariate weight.

3.1. Overarching Research Design

In this section, I will describe the overarching research design of this dissertation. As will be explained later in this chapter, I used a mixed methods approach and collected both qualitative and quantitative data to study PEs in China. Therefore, I will start with an overview of the mixed methods approach in Section 3.1.1 and discuss the advantages of this method in Section 3.1.2. Following that, I will briefly illustrate how the mixed methods approach has been applied to study various aspects of entrepreneurship. Finally, I will explain why this approach was chosen to study PEs in China.

3.1.1 Mixed Methods Approach

The mixed methods approach has become widely used in multiple research disciplines including education, psychology, sociology, geography, and business. The idea of mixed method research is closely related to the notion of triangulation. Campbell and Fiske (1959) proposed the

idea of triangulation, which is defined as “the combination of methodologies in the study of the same phenomenon” (Denzin, 1978: 291). In early conceptualization, the main purpose behind triangulation is to enhance accuracy by allowing multiple viewpoints (Jick, 1979). As the concept of triangulation underwent further development, Jick (1979) argued that the benefits of triangulation can include scaling, reliability and convergent validity.

The notion of mixed methods, however, is broader than triangulation. A broader interpretation of mixed methods allows for mixing not just at the data collection stage, but throughout the entire research process (Johnson et al., 2007). Johnson and Onweugbuzie (2004) defined mixed methods as “the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts, or language into a single study” (p. 17). I follow the definition offered by Johnson and Onweugbuzie (2004).

3.1.2 Advantages of Using the Mixed Methods Approach

Both qualitative methods and quantitative methods have their own strengths and weaknesses. Compared to quantitative research, qualitative research tends to be more concerned with the depth rather than the breadth of knowledge. By depth, I mean density of detailed, contextual information and by breadth, I mean the amount of decontextualized and widely generalizable information (Todres and Galvin, 2005). Single-case studies are an example of a qualitative method that emphasizes depth over breadth. The advantage of a single-case study is that there are a lot of highly textured details within a unique context, and experiences and narratives of individuals can be put into context and interpreted accordingly. However, the disadvantage is that findings may only be applicable to a particular context; therefore, conditions where the findings do not hold true cannot be explored.

A widely recognized strength of quantitative research is the generalizability of its findings. From a practical standpoint, quantitative research is usually less time-consuming in the data collection and analysis phases. Moreover, from a political point of view, quantitative methods may be perceived as having higher credibility with mainstream researchers (Johnson and Onweugbuzie, 2004). A number of weaknesses are associated with quantitative methods. For instance, one major issue is that the findings may be too general to be applied to specific contexts (Johnson and Onweugbuzie, 2004). Another major problem associated with quantitative approaches is that the standpoint of disempowered groups may not be represented and understood in the system of knowledge (Harding, 2003). Through the combination of both qualitative and quantitative methods, the researcher can mitigate potential problems associated with each type of method and improve the robustness of findings.

The advantages outlined above mostly pertain to the data collection and analysis phases. There are also benefits of using mixed methods in the theoretical development stage. As Tashakkori and Teddlie (2003) demonstrate, one advantage associated with using mixed methods is that one can generate and test theory in the same research project. Following a positivist standpoint, quantitative studies are often conducted to verify or reject theories. On the other hand, qualitative research tends to be used to generate new theories. When combining both approaches in the same research design, the researcher can build a new theory based on qualitative results and test the newly established theory by subsequently using a quantitative study. If the results happen to converge, the theory is further corroborated. If the results diverge, there is potential for further inquiries (Rank, 1992; Bryman, 1988).

Another benefit of the mixed methods approach is improved communication between researchers from different paradigms (Johnson and Onweugbuzie, 2004; Maxcy, 2003).

Quantitative scholars can be gradually exposed to the use of qualitative methods without having to convert fully to constructionism and incur a significant cost through conducting a full-fledged qualitative study. In addition, results obtained from quantitative methods can be put into context and more easily understood and interpreted by qualitative researchers as well as the wider audience outside academia. As a result, scholars from both the quantitative side and the qualitative side can communicate and understand each other better through the facilitation of mixed methods. From a practical perspective, improved communication may manifest in the number of citation counts, as shown by Molina-Azorin (2012).

3.1.3 The Use of Interviews for Exploratory Purposes

Qualitative and quantitative methods can be combined in several ways. A common sequence adopted by researchers is using interviews as an exploratory study to provide guidance for a follow-up quantitative study based on surveys. The order of the design depends on how rich the existing literature on the research question is. For instance, if the researcher wants to study a phenomenon that has been studied extensively in the field, then a sequential approach that starts with a quantitative study and ends with a qualitative study might be suitable. When a phenomenon has already received considerable attention, it is likely that many aspects of it have already been explored by other researchers. By starting with quantitative analysis, the researcher can avoid reinventing the wheel and the quantitative analysis can help identify missing links in previously studied relationships. Those missing links can be further explored using a qualitative study that looks at processes and mechanisms. On the other hand, if a phenomenon is understudied, then a sequential design that starts with a qualitative study and ends with a quantitative one might be more suitable. One benefit provided by this design is that the researcher need not be restricted to just one aspect and can use the qualitative analysis to identify

several issues that are worth exploring in the next stage using quantitative data. Novel insights often come from unexpected conversations; the qualitative stage allows for such serendipitous discoveries of research ideas.

Entrepreneurship research has embraced the use of the mixed methods approach. Mixed methods have been employed in the process of shifting from studying personality traits of entrepreneurs to looking at entrepreneurial cognition and how entrepreneurs learn. For example, Kim and Miner (2007) studied the effect of accessibility and applicability of vicarious learning (learning by observing others) on bank survival by combining field observation with secondary data sources. Due to the inability of directly testing the intermediate processes that produce their hypothesized relationships using empirical models, Kim and Miner (2007) chose to conduct a qualitative study to investigate the theorized learning processes and to establish a strong link between their theories and empirical models. Honig (2001) looked at different learning strategies at the individual level for entrepreneurs and intrapreneurs by relying on a random sample of Swedish individuals. Interviews were used as a screening protocol to ensure that only nascent entrepreneurs were included in the final sample.

Another area where mixed methods design has been applied to studying entrepreneurship is the dynamics of the founding team. Scholars have used mixed methods to explore how the founding team evolves over time and how diversity of the team contributes to performance differences. For example, Beckman (2006) used a combination of interview, survey, and archival data to explore how prior founding team affiliations lead to firm formation and the development of initial strategy and structure. The interviews were conducted to provide data on the background and experiences of the founding teams, while archival data and other secondary

sources (such as Securities and Exchange Commission documents and web searches) provided information on the early practices and financial performance of the firms.

Another important area where mixed methods have gained popularity in entrepreneurship is network related studies. Walter et al. (2006) attempted to study the impact of network capabilities on the performance of university spinoffs. To develop a pool of scale items for the subsequent survey, Walter and colleagues conducted in-depth interviews with university spinoffs. Similarly, Zhang et al. (2008) used both interviews and questionnaires to explore how entrepreneurs' human capital influenced decisions to utilize social networks instead of market methods in early venture finance. Interviews were used both to enhance response rates and to develop and refine the questionnaires.

A good example of the sequential approach outlined previously in entrepreneurship research is Dewald and colleagues' work on small firms in the homebuilding industry. In the first phase, Dewald and colleagues (2007) interviewed industry experts and senior managers to get a thorough understanding of the industry norms, perceptions, terminology, and key considerations in determining governance choices, which is the phenomenon of interest. In the second phase, a survey questionnaire was designed, incorporating insights provided through the first phase.

3.1.4 Why Use Mixed Methods to Study PEs?

As mentioned previously, a mixed methods design gives the following benefits that are particularly attractive for my purpose:

1. The qualitative study allows me to develop a comprehensive understanding of PEs in China, a context that has not been studied previously. The majority of extant literature on PEs focuses on European countries such as the United Kingdom (Ucbasaran et al., 2005, 2009;

Westhead et al., 2005a; Westhead and Wright, 1998a), Italy (Iacobucci and Rosa, 2010, 2005; Iacobucci, 2002), Norway (Alsos and Carter, 2006), and so on.

It has been argued that inductive theorizing based on qualitative data is best suited in new or understudied contexts where there has been relatively little work (Bansal et al., 2018). Smallbone and colleagues (2001) have argued that serial entrepreneurship has been used as a mechanism to accumulate capital needed to start a new business in contexts where financing from formal financial institutions is lacking. China is a relatively complex context where institutions are underdeveloped and government still exerts significant power on private businesses (Cull, Li, Sun and Xu, 2015; Gordon and Li, 2003). It is likely that Chinese entrepreneurs have reasons to become PEs that are either not present or insignificant in a developed country. Because there was no previous research on PEs in China, I decided to conduct a qualitative study to examine who the PEs are, including their demographic characteristics, their past entrepreneurial and non-entrepreneurial experiences, and the motivations that made them self-select into portfolio entrepreneurship. Because answering these questions requires an in-depth examination of one's background, experiences, and perspectives, I chose to conduct a series of in-depth interviews.

2. Conducting a qualitative study helps me identify which aspects of portfolio entrepreneurship I would like to examine in the quantitative stage. At the beginning of the qualitative stage, my research question was quite broad. I wanted to look at different reasons that motivated entrepreneurs to start multiple businesses simultaneously. However, I found that the research question was not specific enough to identify a body of literature to which I could make a potential contribution. As will be discussed in more detail later, the key discriminator, whether or not the PE leverages synergy across businesses, emerged unexpectedly during the

qualitative stage. I then shifted the focus of my qualitative inquiry to explore the implications of creating synergies across businesses on the entrepreneurs' behaviors, decisions, and outcome measures (such as new venture performance and entrepreneurial job satisfaction). In short, the qualitative stage helped me hone in on a specific aspect of PEs' experiences and identify a stream of literature that could form the theoretical basis for the subsequent discussion.

3. The quantitative study increases the robustness of the results and makes findings more precise and generalizable. Qualitative studies have often been argued to answer the “why” and “how” questions, while quantitative studies are often used to answer the “what” questions. Qualitative research seeks to accomplish theory building and elaboration, rather than theory testing (Pratt et al., 2020). Using survey questionnaires, I was able to collect data from a larger pool of PEs and test some of the relationships that emerged from the first stage, as well as hypotheses formed from reviewing theories.
4. The quantitative study makes it possible to explore boundary conditions for the central relationships examined. In addition to testing hypothesized relationships, boundary conditions that might change these relationships can also be modelled explicitly and tested using moderation effects. For instance, the survey questionnaire allowed me to collect information about the industries in which PEs compete. Such variation in industries gave me the opportunity to test the importance of industry characteristics on PEs' decisions. The survey data thus enhanced the breadth of information collected, complementing the depth of information offered by the qualitative study. Testing boundary conditions using survey data could also clarify how well the insights generated in the qualitative stage transfer across contexts and beyond individuals' unique situations.

3.2. Qualitative Sample Construction

This section outlines the process of qualitative data collection. I will start with a description of the recruitment process in 3.2.1. and move on to a summary of the interview process in 3.2.2.

3.2.1 Data Collection

To understand why and how PEs start and manage multiple businesses, I conducted semi-structured interviews with PEs in China. The extant literature on PEs has focused heavily on European countries. Very limited attention has been given to understanding the presence of PEs in developing nations, with the exception of Carbonara et al.'s (2019) study of Vietnamese PEs, Fierro's (2013) and Fierro et al.'s (2018) study of African PEs and Robson et al.'s (2012) study of Ghanaian PEs. Being the second-largest economy in the world and the fastest-growing trillion-dollar economy, China is an important economy to study because it is a major player in global economic development. Since September 2014, the Chinese government has promulgated the slogan "mass innovation and entrepreneurship" and nurtured the growth of entrepreneurship by setting forth beneficial policies including simplifying the process of registering businesses, simplifying procedures of work and residential permit application for talented workers, and providing office space in designated areas to entrepreneurial firms and incubators.

In-depth interviews were chosen as the primary source of data in the qualitative study. Interviews have been widely used as a tool to collect data in management and entrepreneurship studies (Kelley, Peters and O'Connor, 2009; Rynes and Gephart Jr., 2004; Isabella, 1990). Advocates of in-depth interviews argue that interviews help create a rich documentation of the interviewees' experiences, ideas, knowledge, and perceptions (Alvesson, 2003; Bryman, Bresnen, Beardsworth, and Keil, 1988; Fontana and Frey, 1994; Holstein and Gubrium, 1997;

Martin and Turner, 1986). During the process of conducting interviews, I had the opportunity to listen to life stories beyond entrepreneurial experiences and get to know the participants at a personal level, which helped me understand their motivations for becoming PEs. I was also able to ask questions and follow up on specific aspects of their experiences and perspectives that I found most intriguing.

Recruitment of interviewees followed a snowball strategy. After interviewing a participant, he or she could serve as a 'seed' contact who could then reach out to his or her friends, business partners, and family members to recruit further participants. I started with three seed contacts, all of whom were family friends. Seed contact #1 was a government officer in Zhangjiang Hi-Tech Park, which is an area in Shanghai dedicated to fostering growth of new enterprises in Hi-Tech industries. Seed contact #2 was the head of a local business association in Shenzhen. Seed contact #3 was the head of a large incubator in Shenzhen. During the interview process, I formed a friendship with a participant who became seed contact #4. Seed contact #4 was an entrepreneur who ran a platform business that connected investors to entrepreneurial projects. I was able to tap into a large network of entrepreneurs with his help.

Because seed contacts #1-3 are not PEs themselves and seed contact #4 is a PE, I was able to tap into a rather diverse pool of PEs who belonged to different social and business groups instead of selecting interviewees from the network of a single well-connected seed contact or several seed contacts who belong to the same network. This is an advantage because my research question aims to uncover the heterogeneity of PEs; being introduced to multiple entrepreneurial networks increased the diversity of PEs sampled.

Participation in this study was made completely voluntary, following the rules outlined by Human Research Ethics at Western University. I engaged in passive recruitment where

entrepreneurs who were willing to participate reached out to me, minimizing the social pressure for them to participate. To increase the sample size, I asked all my interviewees to refer other PEs to me after each interview. I drafted a recruitment email and forwarded the recruitment email to interviewees who agreed to circulate it among their circles of friends, families, and acquaintances. My contact information was included so that anyone interested in participating in the study could easily reach me. Because I relied on referrals made by the existing participants, I provided my seed contacts and interviewees with my definition of a PE: a PE is someone who has founded or cofounded and remained in an active role in at least two businesses simultaneously, at any given time of their entrepreneurial career. When selecting participants, I excluded passive investors who were owners of multiple businesses but were not actively involved in the day-to-day operations of the businesses. I emphasized to my seed contacts and interviewees that a new legal entity must have been formed for a new business to be considered an independent business. This criterion helps distinguish firms pursuing portfolio entrepreneurship from firms with multiple product lines, which I wanted to exclude. In total, I interviewed 33 PEs and 17 non-portfolio entrepreneurs. The detailed summary of the interview cases can be found in Table 4.1. in Chapter 4.

3.2.2 Interview Process

As required by Board of Human Research Ethics at Western University, I started each interview by presenting interviewees with an approved Letter of Information and Consent (LOI/C) (Appendix 2) and soliciting their signature and consent. The LOI/C contains the following sections: purpose of the study; procedures and duration; potential risks and discomforts; compensation for participation; withdrawal; confidentiality; and who to contact with questions. The confidentiality section promises that any information collected, such as name

of the respondent or name of the firms, will be made unidentifiable and the interview will only be recorded if the participant agrees to the request. The LOI/C also states that all recordings and transcribed files will be kept with password protection and only the research team (myself and my supervisor) has access to them. I made it clear in the LOI/C that no compensation would be provided to participants and participation was completely voluntary, giving participants the right to leave at any point in time. I followed the guidelines of Human Research Ethics closely to ensure that participants felt comfortable with sharing their personal stories and experiences.

The interviews took place in early May, 2018 and the interviewing process lasted for a month. The interviews were conducted face to face in settings agreed to bilaterally by the participants and the researcher. The majority of the interviews took place in the participant's office. Each interview lasted from half an hour to an hour. Twenty out of 33 interviews were voice-recorded and transcribed into text later. I documented the other 13 interviews by taking notes during the interviews. The interviews were semi-structured and usually started with an inquiry about the informants' personal stories and previous industry and entrepreneurial experiences. Questions focused mainly on their reasons for starting and managing multiple ventures, but also covered their educational backgrounds, motivations for becoming an entrepreneur, and descriptions of their current firms. Follow-up questions emerged during the interview process and deviations from the original interview protocol were allowed.

I tried to follow Strauss and Corbin's (1994) advice and analyze data before proceeding to conduct more interviews. However, the participants were heavily time-constrained, so I had to manage around their tight schedules by being flexible with interview times. That left too little time between interviews to analyze the data. Once the snowball sampling started to work, I found it infeasible to simultaneously analyze the data and conduct more interviews. As a result,

most of the data analyses were performed after the interview data were collected. In order to judge if more data needed to be collected, I listened to and reflected on each interview at the end of each day to ascertain whether any patterns emerged (Strauss and Corbin, 1994).

In addition to the interviews, I gathered and analyzed supplementary documents including company brochures, information obtained through company websites, and other online sources. For instance, one of the entrepreneurs I interviewed kindly shared an internal company brochure that outlined the origin of the company and included detailed information about the products or services provided. Because I also followed the participants on social media on a regular basis, any important changes made to their organizations were also noted and analyzed.

Although I asked the interviewees to describe their entrepreneurial processes in entirety, the emphasis of the interview questions was on why the newest business was added and its relationship with the rest of the portfolio. When I conducted my interviews, most entrepreneurs were still in the process of setting up their newest venture and were devoting most of their time and attention to the new business. Because they were deeply involved in the process of adding a new business and their memories of relevant events were still fresh, they could more easily recall why they made certain decisions and the contextual factors that had contributed to those decisions. They were less likely to suffer from hindsight bias, which tends to be greater as the time between venture gestation and data collection increases (Cassar, 2007; Conway and Ross, 1984; Hawkins and Hastie, 1990).

The majority of the interviews took place in Shanghai and Shenzhen, both of which are metropolitan cities where a large number of entrepreneurs reside. Shanghai, with a population of 24 million, is one of the most important commercial cities in China. Previous research has shown that Shanghai has a high level of technological entrepreneurship activity and innovation,

illustrating Shanghai's status as a center of China's economic activity (Zhang, Peng and Li, 2008). Shenzhen is a city that links Hong Kong to mainland China. With a population of 12.5 million, Shenzhen has been named a "startup heaven" (Dreschner, 2018) and is known for its relatively liberalized market and favorable policies for high tech sectors (Cheng, Van Oort, Geertman and Hooimeijer, 2014). It is home to well-known companies including Tencent Holdings, DJI, and ZTE. Both cities have had salient establishment of Special Economic Zones (SEZ) in the post-Mao economic development³² and have enjoyed considerable economic autonomy ever since (Zhang, 2013). With a history of having market-based structures, both cities are seen as the best location choices for entrepreneurship in China.

3.3. Quantitative Sample Construction

Chapter 4 will discuss the findings from the qualitative stage in detail. Overall, the analysis of qualitative evidence suggests that synergy between existing business(es) and the newly founded business seems to be an important distinguishing factor that separates PEs who create synergy from PEs who do not. After identifying synergy as an important construct that deserves further exploration, I decided to collect quantitative data using a survey questionnaire to reach a broader range of PEs. In the following sections, I describe how the survey questionnaire was distributed and how the quantitative sample was constructed.

3.3.1 Data Collection

3.3.1.1. Human Research Ethics

Because online survey questionnaires involve a completely different data collection method than face-to-face interviews, I made a number of changes to the Letter of Information

³² Shenzhen Special Economic Zone was established in 1980 while Shanghai's Pudong New Area was established in 1992.

and Consent (LOI/C). The LOI/C explains the following questions to potential participants: why are you here?; how long will this study take?; what will happen to you during the study?; potential risks and discomforts; compensation for participation; can you leave the study?; who will see the information that you give?; and who to contact with questions. I made it clear in the LOI/C that no compensation would be provided to participants and participation was completely voluntary, giving the participants the right to leave at any point in time.

Unlike in the first stage, I could not provide the LOI/C to potential participants in person. Instead, I included it as the first question on the questionnaire. When the potential participants opened the link that had been given to them, they needed to scroll down to the bottom of the screen to select “I CONSENT to take part in this study.” This question was made a forced-response question, meaning that the respondent could not proceed without choosing an answer. If they chose “I DO NOT CONSENT to take part in this study”, they were taken to the end of the survey. Only those who agreed to the content of the LOI/C and consented were directed to the actual interview questions.

3.3.1.2. Survey Design

Table 3.1 illustrates the structure of the online survey questionnaire. The complete questionnaire is available in Appendix 3.

Table 3.1. Survey Flow

Block 1	Letter of Information and Consent
Block 2	Basic information (10 questions)
Block 3	Synergy related questions (19 questions)
Block 4	Questions about hired managers (10 questions)
Block 5	Questions about monitoring (3 questions)
Block 6	Questions about incentives for hired managers (2 questions)
Block 7	Performance of new business (2 questions)
Block 8	Work satisfaction (1 question)

Block 9	Collocation of businesses (3 questions)
Block 10	Capital structure of new business (2 questions)
Block 11	Social capital of entrepreneurs (1 question)
Block 12	Preference for multitasking (1 question)
Block 13	Risk propensity of entrepreneurs (1 question)
Block 14	Demographic characteristics of entrepreneurs (9 questions)

As required by The Office of Human Research Ethics at Western University, I included the LOI/C as the first question to ensure that all participants gave their consent before answering any questions. I asked the respondents to provide some basic information about their businesses (Block 2). Questions in this block include questions about the respondent’s entrepreneurial experience, total number of businesses founded, managerial experience, industry experience, if they are PEs, number of equity partners, number of employees, expected number of employees in 5 years, and the date when the newest business was registered.

Because respondents were free to discontinue their participation at any time, I wanted to ensure they answered the questions that are central to the research questions first. Accordingly, because my research questions focus on the notion of synergy, I arranged the block of synergy related questions near the beginning of the questionnaire (Block 3). In order to understand the connections between the established business(es) and the new business, I used the term the primary business to represent the most profitable business in PEs’ portfolios. The main reason for focusing on the dyadic relationship between the primary business and the new business was to limit the number of questions asked, reduce complexity of the questions, and lessen the cognitive burden for respondents. This block asked questions about the industry in which the primary business competes, the entrepreneur’s primary industry experience, industry of the new business, and so on. The questions asked to capture synergy reflect how I conceptualize synergy in the portfolio entrepreneurship context, which will be discussed in more detail in Chapter 5 and

Chapter 6. In addition, this block also included a series of questions about product-level characteristics, technologies used, and employees' human capital at the primary business, all of which are the constructs examined in Chapter 5.

To examine how PEs hire managers, Block 4 included several questions about top managers hired at the new business. I used the term CEO to represent the key top manager who is in charge of running the new business, excluding the entrepreneur themselves. I asked about the total number of top managers hired, the CEO's tenure, how long the entrepreneur has known the CEO, whether the CEO was an employee at one of the entrepreneur's other businesses, and whether the CEO was a cofounder. In addition, I also included questions about the presence of a venture board, number of members in the venture board, and number of external board members to allow for examination of venture boards (Dowell et al., 2011).

Block 5 included questions about how the entrepreneurs monitor their top managers. Some example questions are: "I spent considerable time and effort monitoring how well the CEO was meeting firm-level goals" and "I frequently participated in formal reviews of the CEO where progress toward firm-level goals was checked." I also included two questions to capture organizational structure and governance: one question asked about the number of layers of management and another about the level of delegation of decision making at the new business.

Block 6 immediately followed Block 5 because questions in Block 6 were about the CEO's compensation. I first asked if the entrepreneurs use incentives as part of the compensation package for their CEO at the new business. I used three items included in Ling et al.'s (2008) measure of long-term incentives for top managers: "To what extent the compensation for the CEO focuses the CEO's attention on the long-term (two or more years) goals of the firm"; "To what extent the compensation for the CEO rewards the CEO for short-term accomplishments

during a fixed time period (e.g., semiannual or annual firm performance reviews)”; and “To what extent the compensation for the CEO recognizes that long-term firm results are more important than short-term firm results”.

Block 7 asked about the subjective performance of new business compared to the industry averages for the survey year (2008). Following Yiu and Lau (2008), I asked respondents to rate venture performance based on ROI, ROA, ROS, sales growth, and market share. I also asked if they planned to continue growing the new firm. Five-point Likert scales were used (lowest 20%=1, top 20%=5). Block 8 asked about the entrepreneurs’ work satisfaction. I adapted a scale developed by Andrews and Withey (1976) to measure five aspects of work satisfaction: feelings towards their work, colleagues, tasks, work environment and workload, and equipment and information available for doing their work.

Block 9 asked questions about the physical distance between the primary business and the new business and the rental cost of the office space for the new business. Block 10 asked about the capital structure and sources of startup funding for the new business. I asked the respondents to provide the percentages of startup capital coming from venture capital, business angels, private equity, long-term loan, short-term loan, and personal savings at both the initial stage and the current stage of the new business.

Block 11 asked questions surrounding the entrepreneur’s social capital, using a scale developed by Zhou, Wu and Luo (2007). The questions covered three aspects: ties with local government agencies, ties with local communities, and local social networks. I chose this particular scale because it was constructed specifically for China, where connections with local government agencies are critical for doing business. Block 12 asked questions about the entrepreneur’s preference for multi-tasking (Kaufman et al., 1991). Examples of questions asked

are “I am comfortable doing several things at the same time” and “I do not like to juggle several activities at the same time.”

Block 13 included questions about the entrepreneur’s risk preference (Ling et al., 2008). Some examples of questions asked are “I prefer to let other firms in our industry assume the risk of product or process innovations before adopting them in our firm” and “I would choose to follow competitors instead of introducing new products ourselves first.” Finally, the questionnaire concluded with 9 questions about the entrepreneur’s demographic characteristics, such as city of residence, age, gender, marital status, number of children, whether one of their parents is an entrepreneur, and education level.

After the survey was designed, I solicited feedback from two researchers who had experience in survey design. Their suggestions improved the consistency of the survey questions and made the survey easier to follow for respondents. For instance, one researcher encouraged me to think carefully about the order of the questions such that questions related to a particular aspect are grouped together to ensure logical consistency.

Prior to sending the survey to a large number of participants, I ran a small-scale pilot test and solicited opinions from three entrepreneurs who I had interviewed in the first stage. Based on their feedback, I changed a few questions. For instance, one of the entrepreneurs commented that the upper limit for Return on Investment (ROI) was too low. The original range given to respondents was from -20% to positive 20%. The feedback I received suggested that Chinese entrepreneurs expect much higher returns and often refrain from investing their time and capital if the rate of return is below 50%. Thus, I changed the upper range to “over 50%” for ROI at the portfolio level.

I constructed the quantitative sample by administering an online survey. The survey was available in both English and Chinese. Two independent researchers who are fluent in both languages helped verify that the translation was accurate. All of the data presented below are from the Chinese version of the survey. In total, I received 337 responses. After eliminating incomplete responses, I had a sample of 302 entrepreneurs, out of which 105 are PEs.

It is unusually challenging to identify and gather data on a representative sample of PEs. First, PEs represent a relatively small percentage of entrepreneurs. As evidenced in previous studies, PEs may only account for around 12% of entrepreneurs in some nations (Westhead and Wright, 1998; Birley and Westhead, 1993). This makes them harder to find compared to other types of entrepreneurs. Second, having greater demands on their time, PEs tend to be even more constrained by time than novice entrepreneurs, reducing their response rates to mailed questionnaires. Hence, using standard probability sampling methods tends to produce low response rates. Third, PEs may not want to publicly disclose the fact that they run multiple businesses simultaneously because this might deter investors who are worried about over-stretch or generate perceptions of greed among consumers. Because of this situation, publicly available information might not accurately classify someone as a PE because some PEs may choose to hide their ownership in multiple businesses. In addition, using publicly available information might be unable to distinguish between entrepreneurs who are actively managing their businesses from investors who make passive investments in multiple firms.

Researchers studying PEs in other countries have used stratified random sampling (by industry) (Westhead et al., 2005; Ucbasaran et al., 2006; 2009; 2010). For example, using a list of business names and addresses provided by Dun and Bradstreet, Westhead et al. (2005a) sent the founder and/or the principal owner of randomly selected businesses questionnaires by mail.

Ucbasaran and colleagues (2006, 2009, 2010) used a similar sampling strategy and obtained a stratified (by region and industry) random sample of independent private firms in the UK. To the best of my knowledge, there does not exist an organization similar to Dun and Bradstreet in China, and it is not possible to obtain a complete list of all registered businesses in China, either. While some organizations collect data (such as name and address of the business, name of founder and primary owner, founding time, etc.) on businesses in China (e.g., Tianyancha and Qichacha), the list of businesses available on these platforms is incomplete. In addition, the legal owner of the firm provided on business registration forms (where Tianyancha and Qichacha obtain most of the information) may not be the actual owner of the firm, making it difficult to identify the right person to complete the questionnaire. The problem of obtaining a viable response rate has also been reported by other researchers conducting mailout surveys in China (Roy, Walter and Luk, 2001). For all these reasons, I avoided public information sources and also rejected general mailout questionnaires. Instead, I used snowball sampling to gain access to this hard-to-reach group of individuals. Snowball sampling is a sampling technique often used to reach narrowly defined populations (Sadler, Lee, Lim and Fullerton, 2010).

In a recent dissertation on African PEs, Fierro (2013) also utilized snowball sampling due to the lack of publicly available information on PEs in the context he studied. Similar to my own observation, he shared the view that PEs generally do not like revealing information to strangers. As a result of these constraints, he relied on snowball sampling where the initial participants introduced him to other PEs, a process that helped him overcome mistrust and suspicion and ultimately gain access to potential interviews.

In order to reach as many PEs as possible, I started with seed contacts who are well-embedded in the social network of entrepreneurs. I reached out to the seed contacts, mentioned

above, in the qualitative data collection stage to help distribute the survey link. To further increase the response rate, I made the survey anonymous, reassuring our participants that no identifiable information was collected. The questionnaire was designed and distributed through Qualtrics, an online survey platform. The link of the questionnaire was sent to potential respondents and all responses were recorded automatically on Qualtrics.

To identify whether someone is a PE, respondents were asked the following question: “Have you founded or cofounded and remained an active role in managing more than one business simultaneously?”. If the answer was yes, I classified the respondent as a PE. Answers to this question enabled me to exclude passive investors who owned multiple businesses but who were not actively involved in the day-to-day operations of the businesses.

3.3.2 Multivariate Weighting

Although snowball sampling is a useful tool when other sampling techniques are unavailable, it may limit sample size and produce samples that are not representative of the target population. Because recruitment occurs through network links, respondents with larger personal networks will be oversampled and more isolated respondents underrepresented in the sample (Erickson, 1979). A concern is that if more socially connected PEs differ significantly from more isolated ones and behave differently in the entrepreneurial process, my sample may produce biased estimates of the empirical relationships I am interested in exploring. To address this concern, I considered constructing multivariate weights to match the characteristics of the sample to population statistics at the national level. However, the following difficulties make the usefulness of calculated weights to adjust for snowball-induced biases dubious at best and downright misleading at worst.

First of all, it is hard to find the population means of entrepreneurs using existing nationwide surveys. Neither Chinese household survey data nor business survey data can be used to construct meaningful weights. I first turned to national household surveys conducted in China. For example, the China Family Panel Study (CFPS) is a nationally representative, annual longitudinal survey of Chinese communities, families, and individuals launched in 2010 by the Institute of Social Science Survey (ISSS) of Peking University. The CFPS collects individual-, family-, and community-level longitudinal data in contemporary China. Although this dataset is representative at the national level, it is not focused on entrepreneurship. This survey contains a number of questions about enterprises run by members of the household but the number of responses to this particular question is limited (with only 191 usable responses). Another potential data source to obtain the population means is the Chinese General Social Survey (CGSS). However, similar to CFPS, the number of responses for the self-employment related questions is only 186, which is too small to be usable.

Chinese business survey data also have limitations and cannot be used to construct weights. The most relevant survey for entrepreneurship is a national survey conducted annually by the Development Research Center of the State Council to evaluate the innovation level of Chinese enterprises (hereafter referred to as the DRC survey). The DRC survey has been administered annually since 1992, using stratified sampling based on industry categories. There are four reasons why using this survey as the basis of sampling weights is problematic. First, the gender ratio of the survey respondents is unlikely to be representative of entrepreneurs in China. In the DRC survey, 92% of the sampled population were male and only 2% were female entrepreneurs. Previous studies on Chinese entrepreneurs reported more balanced gender ratios. For instance, Chu, Kara, Zhu and Gok (2011) conducted a survey on 196 entrepreneurs located

in Shanghai, Beijing, and Guangzhou; 68 percent of their respondents were male and 32 percent were female. Similarly, Su, Zahra, Li and Fan (2019) reported a gender ratio of 36% female in their sample of 818 entrepreneurs. Second, the DRC survey has likely oversampled older entrepreneurs. In the 2015 sample, the average age of the respondents is 54.4, with over one-half of the sample (51.9%) falling into the category “55 years or older.” Su et al. (2019) reported an average age of 41.72 years for a sample of 818 Chinese entrepreneurs, suggesting that the DRC survey is also unrepresentative in terms of the age distributions of entrepreneurs in China. Third, respondents of the DRC survey are legal representatives of companies and in many cases are not the actual owners of the companies (Roy et al., 2001). Last but not least, the DRC survey includes other types of businesses besides privately owned companies, making it less appropriate for describing characteristics of Chinese entrepreneurs. For example, state-owned enterprises were also part of the sample, amounting to 4% in the 2015 survey.

In addition to the problem of finding representative national surveys on entrepreneurship in general, I also faced the challenge that no population level data for PEs currently exists in China. Because previous studies have suggested that PEs differ significantly from novice and serial entrepreneurs in terms of demographic characteristics (Westhead and Wright, 1998), human capital attributes (Westhead et al., 2005a; Ucbasaran et al., 2006), and how they identify and exploit opportunities (Ucbasaran et al., 2009), population statistics of all entrepreneurs cannot accurately represent the subpopulation of PEs. It is simply not possible to weigh the sample of PEs if the population data do not exist.

Nevertheless, I tried to weigh the sample using three variables: gender, education level of the entrepreneur, and the industry sector in which their newest business competes. Due to the

lack of more precise data, I used information on the education level and industry sector given by the DRC survey and the gender ratio reported by Su et al. (2019) as the population mean.

I followed a sequential matching process called raking and created a multivariate weight (Battaglia, Izrael, Hoaglin and Frankel, 2009). Raking performs iterative proportional fitting to produce a set of calibrated weights such that the sample weighted totals of controls match the known population totals (Kolenikov, 2016). I started with the variable (gender) on which the sample and the population means differed the most and applied a weight to adjust for that difference. Next, I moved on to the variable (education level) with the next highest difference and calibrated a weight again. This process continued until the sample means matched the population means. Every time a new weight was applied, the previous calculated weights would change as well. I used the STATA command *ipfweight* to run iterations 10 times such that the weights converged to stable values.

Table 3.2. The Distribution of Calculated Multivariate Weights

Multivariate Weight	
Smallest weight assigned	0.129
Largest weight assigned	8.806
Mean	1
Standard deviation	1.301
Skewness	3.197
Kurtosis	17.322

As a result of the raking process, the weighted sample has a much larger variance than the original sample. As shown in Table 3.2, there is a large dispersion in weights. The largest

weight is 68 times larger than the smallest weight, indicating serious problems with the whole weighting approach in this context. For these reasons, I chose not to weight the sample.

Conclusion

In this chapter, I gave an overview of the potential benefits a mixed methods approach could offer and explained why a mixed methods approach was chosen to study PEs in the Chinese context. I provided details about how the qualitative sample and quantitative sample were constructed. In the following chapter, I will present findings generated from analyzing the qualitative sample.

Chapter 4. Findings from Qualitative Sample

To understand why and how portfolio entrepreneurs start and manage multiple businesses, I conducted semi-structured interviews with portfolio entrepreneurs in China. The detailed description of how data are collected using interviews have been discussed in Chapter 3. I will present some preliminary findings of analyzing qualitative sample in this chapter. Section 4.1 briefly describes how data are analyzed and Section 4.2 discusses the findings.

The characteristics of the interviewees are summarized in the table below:

Table 4.1. Characteristics of the Portfolio Entrepreneurs Interviewed

Case #	Existing business(es)	New business	Synergy	# Current businesses ³³	Location	Gender	#Employees (new business)	Founded (new business)
1	Medical diagnostic software	Meal substitute powder	No	2	Shenzhen	Male	15	Aug 2017
2	Event planning, Storage room	Video production	Yes	3	Shenzhen	Female	20	2015
3	Dialogue in the Dark (blind guides lead visitors in small groups through different settings in dark)	Meal replacement powder	No	2	Shenzhen	Male	15	Aug 2017
4	Hostel	Brewery (specialty beer)	No	2	Shenzhen	Male	1 partner	May 2018
5	Teeth	Dental	Yes	2	Shanghai	Male	120-150	2017

³³ This number includes both the new businesses and any pre-existing businesses that the portfolio manager still owns and manages.

	cleaning machine	center						
6	Automobile parts manufacturing, investment company	Renewable energy transformation (wind and solar energy)	Yes	2	Jiangsu	Male	5	Jan 2016
7	DNA sequencing platform	Lab that provides DNA sequencing services to organizations	Yes	2	Shanghai	Male	15-16	2015
8	Design consulting	Investment firm in healthcare industry	No	2	Shenzhen	Female	5-6	2016
9	Design consulting, software developing	Skincare company	No	3	Shenzhen	Male	20	2016
10	Investment firm	Self-driving car development	Yes	2	Shenzhen	Male	6	2017
11	Development of novel drugs	Pharmaceutical drug manufacturing	Yes	2	Shanghai	Female	40-50	June 2018
12	Securities broker	Wealth management	Yes	2	Shenzhen	Male	7	Feb 2016
13	Toy manufacturing	Shoe manufacturing	Yes	2	Shenzhen	Male	50	2018
14	E-commerce website,	Video production	Yes	3	Shenzhen	Male	20	June 2017

	blockchain education							
15	Medical device for diagnosing and treating causes of dizziness	Ophthalmic devices	Yes	2	Shanghai	Male	5	Jan 2018
16	Genetic testing services for research purposes, parental test services, pharmaceutical drug manufacturing, healthcare consulting	Genetic testing services for hospitals	Yes	5	Shanghai	Male	110	July 2014
17	Medical device for Orthopedic surgery	Post-operative device for spine diseases	Yes	2	Shanghai	Male	10	Oct 2017
18	Medical device for minimal access surgery	Mechanical heart valves	Yes	2	Shanghai	Male	10-20	2014
19	Hostel	Cultural and creative product design	No	2	Shenzhen	Male	4-6	2012
20	Consulting firm targeting foreign firms that want to enter China through E-commerce	Local news sharing platform	No	2	Shenzhen	Male	No employee, 2 partners	2016

21	Advertisement and branding, investment firms (2) in filming industry	Exhibition and cultural events planning	Yes	4	Shenzhen	female	25	Nov 2016
22	Special purpose micromotor, electric machine	AI and robotics	Yes	2	Shenzhen	Male	140	Sept 2017
23	Organic farm, restaurant, import and export	Tea production	No	4	Shenzhen	Male	9	Apr 2017
24	Financial consulting	Golf tournament planning	No	2	Shenzhen	Male	6	Aug 2016
25	Immigration consulting firm, a family business (that he didn't found but now serves as the owner-manager)	New materials	No	3	Shenzhen	Male	60	2014
26	E-commerce website for international sellers and buyers	Information technology and business consulting firm	Yes	2	Shanghai	Male	100	2015
27	Coffee shop chain, business consulting firm	Coffee bean production	Yes	4	Shanghai	Female	5	May 2016
28	Investment	Entrepreneur	Yes	3	Shenzhen	Male	NA	Mar 2018

	company	rship education						
29	Construction material manufacturing	Biological technology firm that develops plant extracts	Yes	2	Shenzhen	Male	17	Mar 2005
30	Optical lenses	Optical lens frames	Yes	2	Shanghai	Male	NA	2000
31	Coffee shop	Consulting firm that target students who want to study abroad	No	2	Shanghai	Male	1	Dec 2017
32	Health related consulting	Meal substitute powder	Yes	3	Shanghai	Male	3	May 2016
33	Café	Dried apple slices; Tour group in Tibetan area	Yes	3	Chengdu	Male	NA	2016

4.1. Data Analysis

Using grounded theory (Strauss and Corbin, 1998), I analyzed the data in two stages. In the first stage, an open coding method was used to identify first-order codes, which are factually based descriptive accounts of each interview (Locke, 2001, Van Maanen, 1979). The first-order codes were then aggregated to higher-level categories, which are more abstract and theoretical in nature. Writing memos was heavily emphasized during the analytical process. Memos were kept and updated regularly to record the reasoning behind the development of higher-level categories. In this way, the thought processes involved in the analysis were well-documented. In addition,

the assumptions made during coding were made explicit in memos such that any potential biases of the researcher were also recorded. For instance, because I had conducted some literature review prior to performing the interviews, I had formed ideas why people start multiple businesses based on prior literature. When these pre-existing ideas were challenged, I would document my assumptions and what I found to be inconsistent with those assumptions.

The first stage of data analysis focused on the identification of first-order codes. Using Nvivo to help organize the codes, I coded the transcripts line by line and assigned each line to one first-order code or multiple codes. This method allows new categories that have not been identified in previous literature to emerge from the data without purposefully imposing any theoretical frameworks. The coding process was iterative in nature as I moved back and forth from theory to data multiple times.

The second stage of the analysis involved aggregating first-order codes into higher-level, more abstract categories. Using the method of constant comparison (Glaser and Strauss, 1967), I made comparisons across cases and looked at relationships between core and related concepts. Because I started with a specific research question, my attention was focused on identifying key motivations as antecedents to portfolio entrepreneurship. Creating memos was an integral part of this process and any underlying assumptions, boundary conditions, and counter-intuitive observations were recorded.

4.2. Results from the Qualitative Stage

Analyzing the qualitative data highlighted the salience of synergy in the process of establishing and managing multiple businesses. Synergy seems to be a key discriminator among portfolio entrepreneurs when the data are analyzed. Two distinct types of portfolio entrepreneurs emerged in the analysis: portfolio entrepreneurs who aspire to build and leverage synergies

across multiple ventures (synergizers) and portfolio entrepreneurs who do not focus on synergy creation (non-synergizers). Section 4.2.1 will deal with findings related to synergizers and Section 4.2.2. will discuss findings related to non-synergizers.

I noticed during the process of interviewing that synergy was an important concept for differentiating portfolio entrepreneurs. I started the interviews by asking very broad “big picture questions” in order to get enough contextual information to understand not only the individuals’ reasons for becoming portfolio entrepreneurs but also why they became entrepreneurs in the first place. As interviewees described their entrepreneurial journey in a chronological order, I started to notice that the connections between their original business³⁴ and subsequent businesses differ from case to case. For example, a group of interviewees (later labeled “synergizers”) talked about how the newest business and the existing businesses share a common knowledge base, distribution channel, customer base, manufacturing facilities and so on. When I asked the interviewees to give reasons why they added the most recent business, many responded to this question from the standpoint of their existing businesses. Some respondents focused on why they separated the new business from the other businesses, while others focused more on the various connections the new business has with the other businesses. Regardless, it was clear that they rarely spoke of the new business without mentioning the effect the other businesses have on the new business and the effect adding the new business has on the rest of the portfolio.

On the other hand, in some cases (later labeled “non-synergizers”), the connections between businesses are less obvious. Personal interests and hobbies tend to play an important role in shaping their decision to start an additional business. Opportunities are often identified

³⁴ Original business refers to the first business of the portfolio analyzed, as it is possible that the first business of the portfolio under study is not the entrepreneurs first-ever business, although in most cases in my sample, both terms refer to the same business.

through their social network which includes business partners, other entrepreneurs, friends and family. For example, Interviewee #9 established his second business because the idea was brought to him by a customer his first business was serving. Because business ideas often came from different sources, it is common that each business was established, independent of the entrepreneur's other businesses. As a result, it is relatively rare that the interviewees in this group described how pre-existing businesses gave rise to the idea of the new business. The notion of accidental discovery of opportunities is also more prevalent in this group.

When analyzing the transcribed text, I analyzed “motivation for starting the original business³⁵” and “motivation for starting subsequent” separately. The group of portfolio entrepreneurs who were later labeled as synergizers reported rather different reasons under each category. For instance, “greater autonomy promised by entrepreneurship” and “ambition to make a greater impact on society” were often cited as reasons for starting the original business. However, a greater variety of reasons were cited for starting subsequent businesses. In particular, they mentioned reasons related to difficulties experienced in the original business such as growth limitations, changing industry conditions, time lags in regulatory processes. The establishment of the subsequent businesses was partially meant to overcome these challenges. In addition, when discussing both motivations for the original business and subsequent businesses, this group also tended to mention financial performance related key words/phrases such as “huge market potential”, “opens doors for new opportunities”, “industry/market conditions” etc. As a contrast, the “non-synergizer” group focused more on personal interests rather than economic reasons. Therefore, I decided to explore these two groups of PEs separately.

³⁵ Again, original business refers to the first business of the portfolio under study.

4.2.1 Synergizers--Portfolio Entrepreneurship with Synergy Creation

Synergy is defined as super-additivity in valuation of a combination of multiple businesses in the context of portfolio entrepreneurship. Super-additivity³⁶ means that the valuation of such business combinations exceeds the sum of valuations over each individual business (Davis and Thomas, 1993). The defining factor that distinguishes synergizers from non-synergizers is whether there exists synergy between two or more of their businesses. Out of the 33 portfolio entrepreneurs interviewed, 22 are classified as “synergizers”.

Analysis of the data revealed that portfolio entrepreneurs who focus on synergy creation utilize the following mechanisms to achieve three types of synergies: A. Operational synergy created through (i) sharing of resources or (ii) vertical integration; B. Demand-side synergy created through complementary product offerings; and C. Financial synergy created through (i) risk reduction and (ii) income subsidization.

A. (i) Operational Synergy Achieved through Sharing of Resources

Interviewee #14 is an example of building operational synergy through sharing resources between two businesses³⁷. The interviewee established a video production company (Business #2) in June, 2017. During the process of producing videos for some technology-related conferences, the entrepreneur discovered another opportunity and established an additional firm (Business #3), which produced educational programs and provided consulting services to individuals and firms interested in using blockchain technology. In this case, a sharing of assets exists between the two ventures established by the same entrepreneur and the excess capacity of

³⁶ In mathematical terms, this definition can be expressed as: $V(\sum_i^n b_i) \geq \sum_i^n V(b_i)$ where the function V represents valuation of a business or a group of businesses. i denotes each individual business, n denotes the total number of businesses owned and managed by the portfolio entrepreneur.

³⁷ Interviewee #14 has three businesses in total. Here the discussion only examines Business #2 and Business #3. Later, in the section about demand-based synergy, I will discuss how Business #1 connects to Business #2.

the first venture enabled the founding and operations of the second venture. Both tangible assets (physical assets such as video cameras, sound devices, live-streaming devices, etc.) and intangible assets (skills and knowledge possessed by the entrepreneur and his team) are shared between the two ventures. The combination of skill transfer and sharing of physical assets constitutes a source of operational synergies (Farjoun, 1998).

“It (founding Business #3) happened during the process of making videos. Because our target customers are mostly technology firms, we participated in a lot of conferences for cutting edge technologies. We were responsible for live streaming some interviews (with industry experts). During this process, we learned a lot about blockchain and we have filmed a lot of blockchain-related courses (in collaboration with a Singaporean University). Eventually we founded a separate firm focusing on the application of blockchain technology.”

“Why did I get involved in the blockchain field? It’s closely related to producing videos (Business #2). University X was the first university that offered blockchain related courses. (Collaborating with University X), we had two sets of live-streaming equipment to stream these courses and make them available on our website. ... Since 2018, there were a number of events related to blockchain, and the organizers would come to us and ask us to help shoot and livestream the discussions during the events. Most events were of this sort. (They came to us) because we were the first video production companies that entered the field of blockchain education.” (Interviewee #14)

A few portfolio entrepreneurs in my sample have applied the same technology and knowledge base to subsequent ventures to reap the benefits of operational synergies. For example, Interviewee #13 runs two businesses in completely different industries. Business #1

produces shoes that target the elderly population with potential risks of deterioration in cognitive function. Business #2 produces toys that help children develop cognitive skills. Although at first glance, the industries of the two businesses seem unrelated, the underlying technology used in the R&D and production processes is shared because the knowledge base of cognitive neuroscience has been applied to the development and production of both products:

“My thought process is very clear. The industries are different, but the underlying technology and data, and neuroscience-based ideas, are the same. The core service I provide stays the same, but the way it is applied to different industries changes.”

(Interviewee #13)

The “core service” the interviewee refers to is providing a physical product that helps develop or maintain cognitive functions. Although targeting different age segments and product categories, the benefits offered by the specially designed shoes and toys are delivered using the same technology and knowledge base.

Similarly, Interviewee #16 established five different ventures, all of which are based on the technology of DNA sequencing. Venture #1 of this portfolio provides DNA sequencing tests to universities, researchers, and pharmaceutical companies. Venture #2 applies the technology of DNA sequencing to genetic testing used by hospitals, while Venture #3 uses the same technology in the field of health consulting. Venture #4 focuses on parental testing and Venture #5 is a pharmaceutical company. Although each of the businesses target different customer groups and provides different services for each customer group, the underlying technology and knowledge base is shared by all five businesses³⁸ run by Interviewee #16.

³⁸ Each business was registered as a separate legal entity, with different organizational structure, ownership structure, tax and business registration numbers. They are substantially different from being five product lines.

Interviewee #12 presents another case in which the portfolio entrepreneur utilizes his accumulated knowledge of the Chinese financial market in two distinct ventures to achieve economies of scope. Before launching their own businesses, the portfolio entrepreneur and his partners had over 10 years of experience working as financial analysts at a reputable commercial bank. The first venture they created was a brokerage firm targeting individual investors whereas the second venture focused on wealth management; both ventures were founded on the knowledge base the entrepreneur and his team had formed in previous years.

A. (ii) Operational Synergy Achieved through Vertical Integration

A second source of operational synergy is created through vertical integration of the supply chain, which is the degree to which different business activities in a supply chain brought under the management of a single company (Majumdar and Ramaswamy, 1994). The benefits associated with integration of supply chains are often derived from increased control over quality, increased speed of delivery and R&D, and potential cost reduction. As observed in Interview #2, after founding her original creative design and advertising company that offers design services to real estate developers (Business #1), the entrepreneur established a storage company (Business #2) and a video production company (Business #3) to support the first business. Because Business #1 often designs and organizes promotional events and exhibitions for real estate firms, it often needs specially designed decorations, posters, signboards, lights, and other necessary equipment and materials. These materials can take up a large amount of space, requiring a dedicated storage area. Thus, the entrepreneur founded the second business, Business #2, which offers storage area to support Business #1 but also serves other design companies in the same industry that need storage. The third business makes promotional videos and TV commercials, playing a supporting role for Business #1. Business #3 also operates as a

standalone firm and offers video production services to other businesses and individuals. The integration of related businesses was a decision made mainly to accelerate the delivery time of and ensure the quality of services provided by Business #1. The owner's rationale was, in her own words:

“For a lot of companies (in her niche market), the materials needed for specific designs are often not available within the firm so they need to buy them from the market. However, there are a number of problems associated with buying from the market: 1. The speed is slow; 2. The end product does not follow the design exactly; 3. You can't make changes or add more elements, otherwise the speed will be very slow; 4. You don't have control over the workers and this often results in lower quality in the end product.” (Interview #2)

Instead of buying from the market as her competitors do, the interviewee decided to make and own the materials needed for promotional events herself. Owning the materials requires space to store them and having a storage room solves this problem. In addition, she also provides the storage room to store equipment and materials used by her competitors, generating an additional stream of revenue. Similarly, the founding of her own video production company (Business #3) helps decrease the wait time for services and ensures the quality of commercials produced given that she now has more control over the commercial production process. The videos produced, along with the other components of the promotional effort (posters and events), deliver a more coherent message for the client companies of Business #1 now that the entrepreneur has control over the video production process.

In addition to enhanced quality control, integrating a related new business into existing businesses can also improve the flexibility and efficiency of the R&D process at the latter. For example, Interviewee #6 runs a manufacturing company that produces rectifiers and regulators

(Business #1) and later he adds the production of electric motors and control systems (Business #2) to his portfolio. The automobile industry is characterized by a long supply chain. As explained by the interviewee, the products of Business #2 and those of Business #1 are closely related as rectifiers are needed for motors to function properly. The R&D process is often restricted if the upstream and downstream partners refuse to cooperate:

“...second (benefit), the speed of R&D. The process of R&D will speed up because in the alternative case (buying from market), I need to find my suppliers (and ask them to develop a new product). They often have various reasons for not being able to do so. I cannot control and allocate the resources they control. In my own manufacturing facilities, I can re-allocate my own resources, which makes R&D much faster.”

(Interviewee #6)

That is, instead of waiting for the upstream and downstream partners to come on board with an innovative idea, Interviewee #6 chose to vertically integrate businesses to speed up the R&D process.

The examples given so far have emphasized how vertical integration improves quality control and flexibility of the existing businesses. Another important benefit of vertical integration is stabilizing the supply of inputs. As suggested in previous research, inter-firm cooperation is often accompanied by problems of instability, especially in cases where trust between the business partners is lacking (Parkhe, 1993; Young-Ybarra and Wiersema, 1999). Reducing the dependence on a particular business partner via vertical integration is a valid approach to combat problems of instability (Heide and John, 1988). For example, Interviewee #11 runs a business that focuses on developing novel drugs (Business #1) and her second business is a drug manufacturing firm (Business #2).

“Now a large number of our suppliers have experienced shortages in supply. Pharmaceutical industries face higher and higher input prices each year. As a result, consumers become the ultimate bearer of the higher prices. If one part of the supply chain increases prices dramatically, that is an irresponsible decision for the end consumers. That’s why I chose to conduct vertical integration to provide a more stable supply of inputs.” (Interviewee #11)

The backward integration is meant to reduce the impact of unstable supply of raw materials created by the recent surge in input prices. Creating stability and predictability for the focal business is therefore the motivation for vertical integration.

Vertical integration is commonly observed in mature industries and the examples mentioned so far resonate with previous evidence of benefits associated with vertical integration found in relatively mature markets (Heide and John, 1988; Parkhe, 1993). However, in a nascent market where the buying options are limited, entrepreneurs may also engage in vertical integration to fill a supply gap. In an emerging industry that is still at an early stage of development, specialization has not yet started and entrepreneurs are often forced to produce various upstream and downstream products themselves. This results in the founding of multiple ventures necessary to deliver a high-quality and reliable end product to customers.

For example, Interviewee #7 runs a DNA sequencing platform that provides online diagnosis of genetic disorders (Business #1) and a lab that provides DNA sequencing services to organizations such as research institutes and hospitals (Business #2). Business #2 is B2B while Business #1 is B2C. The entrepreneur was forced into this decision due to the current stage of the DNA testing industry in China.

“I saw a huge demand for DNA sequencing to diagnose genetic disorders in China, and there’s an urgent demand in terms of clinical diagnosis. However, the biggest difference between North America and China (for this industry) is that in North America, there is a well-established system for diagnosing genetic disorders. ... After the test, genetic counsellors can help interpret the results and provide the diagnosis. But here in China, there is a huge gap in the expertise. In 2015 when we first founded the company (Business #1), there were less than 10 people nationwide who qualified as genetic counsellors. ... We counted again this year (2018), across the country, this number hasn’t doubled, and there are still less than 20 people who qualify.” (Interviewee #7)

In the case of Interviewee #7, in a well-developed market, certain companies can focus on capturing information related to genetic disorders by using a DNA sequencer (Business #1), while others focus on the interpretation of results (Business #2). However, because the industry is in its early stage, the entrepreneur could not find a partner firm that focuses on collecting information from individuals and constructing a database of genetic disorders based on individual-level data such that his venture can focus only on interpreting the results of genetic testing as genetic counsellors. Instead, the entrepreneur is pushed to run both businesses in order to deliver the end product, which is the diagnosis report of potential genetic disorders to clients.

B. Demand-side Synergy Achieved through Complementary Product Offerings

In addition to the supply-side synergies identified above, cases of demand-side synergies are also present in my sample. Demand-side synergies are defined as “inter-industry diversification as a means to create increased value for consumers by offering product and/or service combinations that together expand the consumer utilities offered by the individual products or services” (Ye et al., 2012, p. 209). The concept of one-stop shopping is a good

example of demand-side synergy. Through colocation of goods and services, a one-stop shopping format increases consumer utility by saving their time and reducing other costs of shopping such as travel expenses (Betancourt and Gautschi 1990). The combination of gasoline stations and convenience stores, and the combination of coffee shops and bookstores are two ubiquitous examples of how demand-based synergy can be realized (Ye et al., 2012).

Interview #17 provides an example of demand-side synergy. Business #1 produces a piece of medical equipment used in spine surgeries and Business #2 produces a product that can be used in the postoperative period.

“Both of our products (produced by two separate firms) are targeting spine problems. If a patient just went through a spine surgery, there is going to be a wound in the muscles near the spine. Then the patient may need to wear the belt (one of the products) during the period of the postoperative care. So, the two products comprise a system.”

(Interviewee #17)

From the supply-side perspective, the two products require very different production facilities such that operational synergies are absent. However, from the consumer’s point of view, the two products go hand-in-hand because they each target a specific time period during the treatment of a spine problem. In this way, demand-side synergies are created and leveraged by some PEs.

I previously mentioned Interviewee #14 as an example of supply-side synergy. In fact, in addition to their video production company (Business #2) and their company that produces educational programs related to blockchain technology (Business #3), the interviewee also operates an online shopping platform (Business #1). The connection between Business #2 and Business #1 can be seen as an example of a demand-side synergy.

“For instance, you saw a video, and you find the product in the video appealing and you want to purchase it but you don’t know where to go. Now we have a function, on the video there is a button, click it, it takes you to the page where you can make the purchase.” (Interviewee #14)

The video website for Business #2 promotes products that are being sold on the shopping platform, bringing additional traffic and potential customers to the platform. Through minimizing customers’ search costs and optimizing their use of time, the combination of video production and the online shopping website creates a demand-side synergy and increases sales of Business #1.

C.(i) Financial Synergy: Risk Reduction via Hedging

In addition to operational synergies, entrepreneurs may choose to start additional ventures to reduce the risk level they face. When the PE owns and manages more than one venture, the impact of any venture-specific risks can be reduced at the portfolio level. Interviewee #6 provides an example of using diversification into unrelated industries as a means to reduce risk. Originally operating in the automobile parts industry, the interviewee chose to diversify into renewable energy industries to minimize the overall risk level of his portfolio. He commented,

“For a number of years, I benefited from the growth of the industry so I never thought of tapping into other industries. Because the profits were so good that I didn’t foresee any crises. But from 2010 onwards, during the recovery of the financial crisis, I realized that we need to strategically expand our footprint to maintain long-run sustainability.”

(Interviewee #6)

That the environmental changes occurring in the industry forced the entrepreneur to rethink the risks he faced, shows that the decision to diversify one’s portfolio of firms can be a response to

an external shock. In order to balance the high risks associated with operating in a single industry, the entrepreneur chose to establish another firm in the solar energy industry. As solar energy is an alternative energy source to gasoline, there exists a negative covariance between the stochastic returns of solar energy related industries and gasoline-based industries (Zhu, Jin, Wu and Wen, 2019). Since current automobile industry is still dominated by gasoline-powered vehicles, investing in industries where returns are negatively correlated can effectively reduce earnings instability, as suggested by the mean-variance portfolio theory (Markowitz, 1952).

Similarly, Interviewee #18 established the second firm to mitigate high risks associated with the first firm. *“Venture #1 faces very high risks and requires a high level of investment. Venture #2 on the other hand, is only moderately risky and it is relatively easy for us to get regulatory approval. In addition, there are no similar firms in the market yet so we saw the opportunity.”* (Interviewee #18)

Although both firms run by Interviewee #18 are in related industries, due to the different levels of regulation faced by different product categories, the entrepreneur established the second business with a product that involved a lot less risk. In the entrepreneur’s view, Business #2 is unaffected by the regulations posed for Business #1, and has the potential for generating additional income streams. Although the risk is not completely diversified away (as the two businesses are not uncorrelated or negatively correlated), the expected increase in income and the potential for leveraging operational synergies still makes the portfolio a superior option than having a single high-risk business.

Through running multiple businesses simultaneously, PEs enjoy the flexibility to reallocate resources from one venture to another when the external environment poses specific risks to an individual venture. Having multiple ventures also makes the overall payoffs to the

entrepreneur less affected by wrong strategic moves made within each venture. Portfolios in which independent decisions can be made to support or withdraw from individual entrepreneurial initiatives will have greater upside potential than a portfolio in which multiple entrepreneurial initiatives will be affected by one choice (McGrath, 1999). This is because failures can be contained in individual initiatives, lowering the risk of affecting the core business and other entrepreneurial initiatives. By the same logic, PEs may seek better protection against risks due to the fact that potential failures are containable in each individual business.

C. (ii) Financial Synergy: Risk Reduction via Income Cross-Subsidization

For entrepreneurs, the need to achieve long-term growth must often be balanced with the need for short-term survival. When external capital is not readily available, entrepreneurs tend to turn to internal sources of capital to sustain their ventures. Establishing another venture that generates steady income could be a solution to alleviate such financial constraints and reduce the risk of exit in the short run. Previous studies have provided some evidence that entrepreneurs may start other income-generating ventures in addition to their main entrepreneurial occupation due to the contingencies of economic survival (Carter et al., 2004; Granovetter 1995; Ram et al., 2000). In my sample, there is some evidence that entrepreneurs start additional ventures for the purpose of cross-subsidization across ventures.

“This firm was founded in 2013. It’s been five years and we are still waiting for the FDA approval. It is very common for new products to go through the approval process for 5-10 years. But during this waiting period, you still need to invest a lot of financial capital and human capital to complete this process. For instance, the application documents are a few thousand pages long and they are written by my employees. This project is very promising as I have faith in the product, and how quickly the product can be diffused in

the potential market. However, it doesn't create any income at the current stage."

(Interviewee #15)

Whether the entrepreneur is relying on the external capital market or the internal capital market is an important contributing factor to the decision of portfolio entrepreneurship. More specifically, the preference for using internal sources rather than external sources of capital is likely to push the entrepreneur to establish a "cash-cow" business. Internal capital tends to be preferred when the entrepreneur has different time horizons than external investors. This is a conflict often faced by entrepreneurs in certain industries where much longer R&D periods are required to develop a new product. Interviewee #15 reported that he did not want to rely on external finance, so generating income using another venture becomes the best alternative.

"Others (business partners) have offered to refer me to potential investors, and I turned them down. Once you start selling the products, the cash inflow is a large amount, because the profit (for medical devices in general) is very high, the gross profit is really high....But the risks for early stage are high, because you won't know if the product will sell for a number of years (before market launch). In addition, you have to go through regulatory approvals, (during this period) you don't have any cash inflow and you still need to pay so many employees. This is a real challenge. Once I have positive revenue, why would I need investors' money?" (Interviewee #15).

The pressure to support employees who are hired for R&D and getting regulatory approvals can be alleviated if the business has external investors who can provide a large lump sum of cash. But the trade-off entrepreneurs need to face is giving up a part of ownership stake as well as the decision-making power. Interviewee #15 decided to finance the new business himself in order to retain the ownership control and autonomy in decision-making.

Similar to Interviewee #15, Interviewee #7 also develops radically innovative products (online diagnosis of genetic disorders) in a field that is still in its infancy in China. Business #1 builds a platform that can be used to diagnose genetic disorder virtually while Business #2 is a laboratory that provides DNA sequencing services to organizations and hospitals.

“The platform we are building require the purchase of patents and we need to buy data from North American companies. And we also need to develop our own innovative coding, which requires high quality coders. Coders are probably the most expensive employees in the market now. And our CTO is working on design related AI projects, which incurs very high costs. We need a tool and a channel to generate cash-flows.”

“We started to realize that it is very difficult to turn the platform-related services into cash, it is very hard to do so quickly. ...But providing DNA sequencing services to hospitals and medical centers (Business #2) can generate sales revenue. We were officially ready (to start operating) last January, and we started taking orders in February. After some adjustment and being in operation for three quarters, the third quarter revenue was around 4-5 million RMB. We can almost reach 12-13 million this year, that’s the speed of growth for Business #2. As for Business #1, we did more trials (letting the customers try out for free) than actual sales. For the first year of operations, maybe because I made it free of charge for too long, we only had around 1 million as revenue. This year, we had around 1-2 million in revenue. I can wait, because of Business #2. Business #1 takes time as data accumulation takes time, but at least I don’t have to worry about supporting my team. As these two businesses support each other

(financially), I could wait more patiently and search for breakthroughs and possibilities, rather than looking for external investment.” (Interviewee #7)

Both cases demonstrate that the establishment of multiple ventures is meant to help with the zero cash-flow situation during the R&D stage and the prolonged development and market validation period often associated with a radically innovative product. In addition, as explained by Interviewee #15, the time required to obtain regulatory approval and certification for radical innovations may be prolonged; having another venture that can quickly generate income serves as a risk-reduction mechanism.

4.2.2. Non-Synergizers--Portfolio Entrepreneurship without Synergy Creation

While synergizers represent over one-half of the sampled entrepreneurs, the presence of non-synergizers is also significant (11 out of 33). For example, six of the PEs in the sample chose to start another business, while managing at least one other venture, to pursue personal interests and hobbies. In the case of Interviewee #24, for example, starting a golf club (Business #2) in addition to running a financial services venture (Business #1) served to fulfill his passion for golfing after playing professional golf for years. The golf club not only provided the space and equipment for recreational and professional golfers, but also for organized tournaments and events. By establishing the golf club, the entrepreneur could stay connected to the network of golfers, promoting the culture associated with this sport and contributing to the development of golf as a sport in China. In his own words:

“I used to be a professional golfer but I injured myself during a competition so I couldn’t continue with my athletic career. That’s why I wanted to start Business #2, in order to continue pursuing my golfing dream.” (Interviewee #24)

As showcased by Interviewee #24, an entrepreneur's strong connection to a community that shares the same hobby may influence their decision to establish a second venture. Owning hobby businesses appears to be a common phenomenon in my current sample of PEs. Hobby businesses are often started to satisfy identity-based needs. For example, viewing career choices as nonlinear and dynamic, Sullivan, Forret, Mainiero and Terjesen (2007) used the 'Kaleidoscope Career Model' to explain how individuals alter their career patterns by rotating various aspects of their lives to better satisfy the needs brought upon by new roles and relationships. Three decision parameters that lead to major career shifts were identified: the individual's quest for authenticity (i.e., a need to be genuine, true to oneself, and have behaviors and attitudes aligned to personal values); the need for balance (the individual's need to create a healthy equilibrium among work, relationships, caregiving roles, and other nonwork aspects of life); and the need for challenge (the individual's striving for stimulating work, career advancement, and self-worth) (Sullivan et al., 2007). In this context, the quest for authenticity and the need for balance are pertinent because entrepreneurs can use a new venture to satisfy these needs. Pursuing one's authenticity helps reduce the gap between the "ideal self" and the "actual self". Authenticity plays an important role in shaping career choices in various contexts (Baker and Aldrich, 1996; Ibarra, 1999). By establishing a hobby business, an entrepreneur may be able to align their private and public domains (Ibarra, 1999).

The need to balance one's work and nonwork aspects of life can be another important contributing factor to the decision of starting a hobby business as an additional company. In the case of Interviewee #24, the founding of the golf club not only provided the entrepreneur a way to continue playing golf as a hobby, but also created a networking environment for him to reconnect with fellow golfers and professionals. The interviewee's needs for leisure and

socialization were satisfied simultaneously with the establishment of a hobby business. Entrepreneurship thus provides a unique career opportunity for one to achieve work and nonwork goals simultaneously. As Interviewee #4 commented, *“there are so many opportunities for creating new businesses. I can only base my decisions on what interests me the most, what market allows and what is doable.”* This quote suggests that when considering multiple business opportunities, entrepreneurs may prefer business ideas for which they have strong interests in and from which they could derive high levels of satisfaction. The alignment of one’s interests with one’s career decisions could provide so much satisfaction that they are willing to forgo the greater potential financial benefits associated with other opportunities.

Hobby businesses have not received much attention in the academic discussion of PEs. However, based on the interviews I conducted, hobby business owners are an important group among non-synergistic PEs. The establishment of a hobby business is often supported by a pre-existing business that provides income to the entrepreneur. The prevalence of hobby businesses has been shown to be higher in creative industries, including arts, crafts, design, cultural heritage, and sports (Kadile and Biraglia, 2020). Previous research showed that there is an increasing number of new small brewing businesses in North America run by entrepreneurs who were previously homebrewers and these homebrewers tend to start their activity as a hobby (Kadile and Biraglia, 2020; Carroll and Swaminathan, 2000; McGrath, O’Toole, and Canning, 2019).

In creative industries, the stream of income generated by the business can be quite unstable, unpredictable, and minimal. Running a stable income-generating business that operates in another industry simultaneously thus becomes a good option for entrepreneurs who want to continue running their hobby businesses while still having enough income to support themselves

and their families. However, this motive is different from the risk reduction motive mentioned previously in the financial synergy discussion. For those who use supplementary stable income sources to support one of their other businesses, the entrepreneurs expect that the financial returns of the business being supported are high enough for the cross-subsidization to make sense. If they do not have high hopes for the future performance of the business being supported, they would have simply dropped the idea. Thus, the basis for this decision of cross-subsidization is purely financial. For people running hobby businesses, the purpose of running other businesses that provide stable income is for getting gratification from the hobby business, regardless of the future performance and financial returns of the hobby business.

Similar to hobby businesses that tend to generate unstable streams of income, entrepreneurs running social enterprises also face similar problems. As shown in the case of Interviewee #4, who runs a social enterprise where blind guides lead visitors in small groups through different settings in complete darkness, the interviewee started the second venture to support himself and his family financially. He identified the growth limitations faced by social enterprises as one reason that he considered establishing a second business where he could gain more financial returns as well as social influence (as a successful entrepreneur), such that he could keep promoting the social enterprise to a wider audience.

“For social enterprises, one of the challenges we face is the scale-up problem. I want to influence more people, but there are lots of limitations originated from the fundamental business model. Physical space and location is another limitation to scaling it up. So, the venture is sustainable, but hard to grow to a larger scale. So, we try to think of other ways to increase our influence and that’s why we choose the combination of product

offering and an internet-based approach (what the second venture does).” (Interviewee #4)

Conclusion

In this chapter, I have described three types of synergies PEs are able to create and outlined a few mechanisms through which synergies are created, based on my sample of 33 PEs in China. First, some synergizers are able to materialize operational synergy created through the sharing of resources or vertical integration. Second, some synergizers generate demand-side synergy through complementary product offerings. Third, the presence of financial synergies is also observed in the sample and risk reduction at the portfolio level is achieved through hedging and income cross-subsidization. In the next chapter, I will examine factors at the product, firm and industry level that have incentivized PEs to create these three types of synergies identified in this chapter, using a quantitative sample of PEs in China.

Chapter 5. Findings from Quantitative Sample (Study 1)

As described in Chapter 3, the overarching research design of this study follows a sequential approach. The collection of qualitative data was meant to provide insights for potential research questions that can be explored further using a quantitative sample. Because I had the opportunity to design and administer my own survey, I attempted to develop some hypotheses prior to the collection of quantitative data such that relevant scales for the constructs of interest could be included in the survey. The qualitative evidence provided in Chapter 4 formed the basis for some exploratory theorization. This chapter will present four hypotheses I developed prior to the collection of survey data.

This chapter proceeds as follows. Chapter 4 made the distinction between synergistic and non-synergistic PEs; here, I developed hypotheses by identifying four factors that encourage individuals to select into one category over the other. Using the quantitative sample collected through an online survey, I tested H1-H4 using simple OLS regressions. I then discussed how my findings extend the literature on PEs and limitations of the current analysis.

5.1. Hypothesis Development

The diversification literature has focused on firm level variables that contribute to the decision of corporate diversification strategy. Underlying assets from which products and services are derived are the focus of the discussion and diversification decisions originate from the desire to redeploy the resources the firm already controls (Penrose, 2009). However, product-level variables are often neglected. Although many early-stage entrepreneurial firms focus on a single innovative product rather than having an extended product line, the recent shift from producer-led innovation to open innovations, which often originate from the consumers, shows that new market opportunities often arise from adding certain features to existing products or

changing product characteristics. Product-level characteristics are important to consider when discussing the potential for both innovation and entry into new markets.

Product complexity is one product-level characteristic that is relevant for new product introductions. I will explain the importance of product complexity in the following paragraphs. One way of capturing product complexity is examining the number of inputs that go into the production of a product. In this study, I define product complexity as the multiplicity of inputs. Inputs include materials, labor, capital, and technologies used to produce a product. An example of a highly complex product is an automobile. The vehicle can be decomposed into major systems such as body, powertrain, chassis, interior, climate control, electrical, and trim. These major systems are further decomposed into a variety of subsystems which are then decomposed into component parts (Pimmler and Eppinger, 1994). The number of inputs required to produce a vehicle is much larger than a simple product, such as a pencil.

I contend that high product complexity leads to more product innovation opportunities. The higher the complexity, the more opportunities there exist because changing one of the inputs can lead to innovations. Innovation can be defined as the process of the adoption of internally or externally generated devices, systems, policies, programs, processes, products, or services that are new to the adopting organization (Rosenbusch et al., 2011; Damanpour, 1991). In this chapter, the discussion will focus on innovations that lead to new products.

A large number of inputs offer more potential for new combinations of inputs. For instance, for a complex product X that requires four inputs a, b, c, and d, the combination of a and b may produce a different product, product Y. Similarly, the combination of a, b, and c may produce another distinct product, product Z. As the number of inputs increases, the number of potential combinations of inputs also increases. New combinations of existing inputs can lead to

innovations. The creation of new combinations allows the entrepreneur to reap the benefits of economies of scope because both the new product and the existing product share similar inputs. For example, the entrepreneur can use existing suppliers for the inputs, saving time and transaction costs involved in finding a trustworthy supplier.

In addition, once an innovative way of combining inputs is discovered, such innovations may lead to more innovations. Sarasvathy, Menon and Kuechle (2013) explored how serial entrepreneurship can be modeled as a contagious process. They applied the model of Polya urns to show that successes in previous entrepreneurial ventures breed successes in subsequent venturing efforts. In their model, they showed that in contagion processes, even when the relative probability of an entrepreneur producing another success does not change, the conditional probability of failure decreases with increasing numbers of previous successes. Similarly, how product complexity produces opportunities for new ways of combining inputs can also be modeled as a contagion process. If discovering a new combination is viewed as a “success”, a successful discovery of a new combination will breed more successes, making the innovative process a chain reaction.

An explanation for this contagious process is that with more components included in a product, the entrepreneur has more opportunities to experiment with new combinations of inputs and learning from these experiments increases the likelihood of future successes. A large number of inputs can facilitate learning from experimentation because more trials can be conducted. Success can breed success, and even failed trials may contribute to the next successful discovery of a new combination. A large number of inputs also provides more opportunities to explore interactions among different inputs. Both successful and failed combinations can provide valuable information about the compatibility of certain inputs.

The creation of new products can sometimes lead to the establishment of a new venture. Depending on how radically different the new product is, the entrepreneur may choose from a range of organizational structures to facilitate the development and sale of the new product. The range of options includes the creation of a separate venture in which the parent company holds partial or complete ownership, continued internal development, sell-offs, and termination of the project (Parhankangas and Arenius, 2003). The new product may exist in an adjacent industry and require industry specific knowledge to support its marketing and distribution. The establishment of a separate firm may have the benefit of decreasing the administrative burden for the parent firm and exploring revolutionary ideas at arm's length from the main businesses (Parhankangas and Arenius, 2003; Ito and Rose, 1994). Research on corporate spinoffs showed that establishing separate firms helps reduce the complexity of divesting firms (Bhushan, 1989; Feldman et al., 2014). A distinct new product may cater towards a different customer base and a separate venture may help establish the identity and reputation of the new product. Compared to having multiple product lines, creating a separate venture avoids potential diseconomies of scale in management costs (Zenger, 1994). It is recognized that not every new product development leads to the creation of a new venture, *ceteris paribus*; however, the chance of the entrepreneur choosing to do so increases when product complexity increases.

Economies of scope can be realized when new combinations of inputs lead to product innovations. Taking the production of sunscreen as an example, it has been shown that the addition of antioxidants can improve the photoprotective effects of sunscreen (Chen et al., 2012; Edlich et al., 2004). The combination of antioxidants and photoprotective ingredients can lead to enhanced effectiveness of the product. For a firm that already produces products with antioxidants and photoprotective inputs, a new product combining both types of inputs can be

created and produced more easily, without incurring the cost of finding suitable suppliers and negotiating purchasing prices. Having complex products requiring a large number of inputs means that the entrepreneur has more opportunities to capitalize on scale-related synergies through sharing common inputs and finding new configurations of inputs.

Hypothesis 1: High product complexity makes the entrepreneur more likely to become a synergistic rather than non-synergistic portfolio entrepreneur.

5.1.2. Technological Versatility

Technological versatility of the fundamental technology used by the existing business(es) is another factor that contributes to an entrepreneur's decision to create synergy across businesses. Technological versatility is defined as the range of a technology's applicability. With a large range of applicable markets, the technology can be utilized in a number of markets for various purposes. The range of a technology's applicability thus captures the versatile nature of a technology to satisfy vastly different needs of users in a variety of industries. A technology is considered to have high versatility if it can be applied to multiple downstream markets. A firm that employs a highly versatile technology can more easily diversify into other markets where the same technology can be applied, compared to their counterparts utilizing technologies with low versatility.

An example of high technological versatility is the laser industry. Lasers differ with regard to their power and the wavelength of light they emit. Consequently, they can be applied to a number of markets, including biomedical/medical (medical imaging and dermatology, etc.), information processing (scanning, optical disk reading, etc.), telecommunications (data transmission, generation), and military (target designation) (Conti et al., 2019; Klepper and

Sleeper, 2005). A key characteristic of a versatile technology is that the technology's application in one specific market would not preclude its application in the other markets.

When the same technology is applied to a new market, the initial setup cost can be significantly less. Compared to technologies that cannot be readily applied to new markets, highly versatile technology has the benefit of being fungible. Fungibility refers to the fact that the same technology can be applied elsewhere without substantial frictions (Kim and Bettis, 2014). For a highly versatile technology, not a significant amount of resources is required to make the appropriate adaptations for each additional market. The fungible nature of a versatile technology creates economies of scope by sharing the initial set-up costs of the technology across multiple businesses. These initial set-up costs include investments in both tangible assets and intangible assets. The purchase or rental of equipment and workplace are examples of investment in tangible assets. The hiring and training of specialists and experts and the research and development expenses used to further advance the technology are examples of investments in intangible assets.

Furthermore, the existing venture may already have a significant amount of accumulated knowledge regarding the core technology. When the accumulated knowledge is applied to new fields, the stock of knowledge does not decrease. For tangible assets such as machineries, properties, and financial resources, adding another field to which these physical and financial assets are used will deplete the stock of assets available for existing operations. Unlike tangible assets, applying accumulated knowledge will not decrease the amount of accumulated knowledge available to existing businesses. In fact, the accumulated knowledge may increase at a faster speed if knowledge associated with multiple markets can be absorbed and integrated

(Zahra et al., 2000). It is often observed that initial versions of an application of a technology are rudimentary and subsequent iterations improve significantly and have greater commercial viability (Ahuja et al., 2013). The newly integrated knowledge can then benefit the original application of the core technology, leading to improved products or processes. In this sense, any new addition to the existing stock of knowledge can generate a greater impact across ventures, creating a positive spillover effect within the entrepreneur's portfolio of ventures.

During the process of applying the technology to a new market, the entrepreneur may discover new opportunities. Deeper understanding of the technology itself as well as the adaptation process may enable the entrepreneur to discover new markets where the core technology can be applied (Gruber et al., 2013a). They may realize that in addition to the target customers, a different group of customers may be served more effectively when certain modifications are made. Some applications may end up becoming more successful when the target market is changed. For instance, the tough glass from which Corning's Gorilla Glass products are derived was originally meant to be used in car windshields but is now used very successfully for smartphone screens (Ahuja et al., 2013).

The process of new market entry is another mechanism through which learning occurs. It has been argued that market-specific knowledge can only be gradually gained through experience (Johanson and Vahlne, 1977). The ability to optimally configure the technology to appeal to a given set of users is acquired through experiences. Once the entrepreneur has enough experiences associated with adapting the core technology to a new market, subsequent entry of another market may become significantly easier. Therefore, highly versatile technology is likely to lead to the creation of synergies across businesses. Because non-synergizers do not base their

decisions to start multiple ventures on sharing a common technology, the potential synergies that could be created through using a highly versatile technology are not present.

H2: Entrepreneur using highly versatile technologies is more likely to become a synergistic rather than non-synergistic portfolio entrepreneur.

5.1.3. Employees' Specific Human Capital and General Human Capital

Human capital is defined as the skills and knowledge that individuals acquire through investments in schooling, on-the-job training, and other types of experience (Unger et al., 2011; Becker, 1962). By specific human capital, I refer to industry-specific human capital, defined as the training and skills that are specific to a given industry (Neal, 1995). General human capital is defined as training that is equally useful to both the firm providing the training and other firms (Becker, 1962). Level of education and other labor market experiences outside the given industry are considered to be examples of general human capital. The emphasis in this study is on the human capital of *the workforce of the entrepreneur's existing businesses*. Extant research on human capital focuses exclusively on the human capital of the owner or top managers rather than employee-based human capital (Chowdhury et al., 2014; Rausch et al., 2005). Looking at employee-based human capital can shed light on how specificity in human resources can affect the entrepreneurs' decision to add an additional business.

Specific human capital is often needed to create complementary products and services in support of the existing products/services. Researchers studying absorptive capacity have argued that prior related knowledge is needed to assimilate and use new knowledge (Cohen and Levinthal, 1990). Previous research in cognition has suggested that individuals with prior knowledge are able to focus their attention on the most important dimensions of the information

available and process the information more efficiently (Shepherd and DeTienne, 2005; Patzelt and Shepherd, 2011; Chase and Simon, 1973; Choo and Trotman, 1991; Weber, 1980).

Moreover, individuals with prior knowledge are able to create “categories of information based on a deep structure that involves more, stronger and richer links between concepts” (Shepherd and DeTienne, 2005, p.94; Gobbo and Chi, 1986; Chi and Koeske, 1983; Frederick, 1991; Frederick and Libby, 1986). Gruber et al. (2013b) argued that people with experience in a given domain have different mental models of certain concepts because they encode and process information in a more abstract, complex manner than people who lack experience in that domain (Gagné and Glaser, 1987). The ability to recognize and understand interconnections between concepts is key to coming up with complementary products.

The creation of complementary products requires significant knowledge of the market and consumer needs. Having a high level of specific human capital will not only help the entrepreneur and knowledgeable employees identify more consumer problems, but also allow for opportunities to solve these problems with existing resources and technologies (Gruber et al., 2013b). A deep understanding of existing resources in conjunction with thorough comprehension of consumer needs lays the foundation for creating complementary products. Thus, a high level of specific human capital of the workforce at existing ventures leads to a higher likelihood that the entrepreneur will explore options that are complementary to the existing field and attempt to create synergies across ventures.

There are multiple ways that synergies can be created when complementary products and services are introduced. With the provision of supplementary products and services, the value the original product and service has created for consumers can be further enhanced, increasing

potential revenues that can be generated. Cross-selling opportunities of product bundles may also increase revenue. If the complementary products or services are meant to serve customers with similar needs, preferences, and behaviors, the overall marketing and advertising costs can decrease because general marketing expertise and the sales team can be re-deployed in new ventures (Tanriverdi and Venkatraman, 2005; Capron and Hulland, 1999).

As opposed to firms making partial investment in developing industry-specific skills in the case of specific human capital, general human capital is acquired by individuals making the investment themselves. Because of the nature of the investment, general human capital, such as education and general labor market experiences, are more transferrable and can be applied to different contexts. General human capital of founders has been shown to increase the likelihood of self-employment (Robinson and Sexton, 1994) and the number of opportunities identified (Davidsson and Honig, 2003; Ucbasaran et al., 2008). The discussion below contends that general human capital of the employees will also increase the number of opportunities identified by the entrepreneur due to the higher stock of information and knowledge from various industries at the firm level.

The exploratory interview data show that many non-synergizers identify new opportunities by accident. Shane (2000) argued that in some cases, entrepreneurs recognize opportunities not through purposeful search, but through identification of the value of new information that they happen to receive through other means. The formation of knowledge corridors may prevent entrepreneurs from discovering opportunities from a distant knowledge base (Ronstadt 1988; Venkataraman 1997). The accidental identification of the opportunities can be traced back to the diverse work experience of the workforce and a larger opportunity set

(Gimeno et al., 1997). Individuals who have been exposed to more than one job setting may acquire a diverse range of knowledge and skills, which is conducive to the discovery of new opportunities (Ucbasaran et al., 2008). Instead of being restricted to the information in a particular market, the employees having a high level of general human capital may increase the entrepreneurs' exposure to potential opportunities in a variety of industries.

Search behavior enabled by specific human capital often differs from that enabled by general human capital. Both systematic search and spontaneous recognition can lead to discovery of opportunities (Fiet, 2002; Shane, 2000). Using one's general human capital is related to undirected search by generating variety, while deploying one's specific human capital is related to directed search by limiting variety (McGrath, 2001). Non-synergizers may have a higher likelihood of engaging their employees in undirected search because they are not restricting themselves to exploiting opportunities that are relevant to their existing businesses. On the other hand, synergizers are more likely to purposefully search for solutions to enhance the value created through combining a new opportunity and existing businesses. Starting from their existing businesses, synergizers may begin their search in adjacent fields and gradually expand the search area to more distant fields.

As a result of the differences in search behaviors, specific human capital will not be as beneficial to non-synergizers as to synergizers because the latter group and their employees often conduct undirected searches in distant fields where the existing employees' specific human capital lacks the immediate relevance. General human capital of the existing workforce may be more important because a higher level of general human capital of current employees will facilitate unintended discoveries due to the large information flow and diversity of information,

which ultimately leads to identification and exploitation of new opportunities that may be radically different from the existing businesses. If the new opportunity is deemed promising enough, even though there is no synergy between the new venture and the existing businesses, the non-synergizer may still decide to establish a separate venture to exploit the opportunity (Parker, 2014). Thus, a high level of employee specific human capital facilitates the identification of related opportunities for synergizers whereas a high level of employee general human capital is conducive to recognition of unrelated opportunities by non-synergizers.

Hypothesis 3a: High relative proportion of general human capital of existing employees makes the individual more likely to become a non-synergistic portfolio entrepreneur rather than synergistic portfolio entrepreneur.

Hypothesis 3b: High relative proportion of specific human capital of existing employees makes the individual more likely to become a synergistic portfolio entrepreneur rather than non-synergistic portfolio entrepreneur.

5.1.4. Market Thickness

Extant literature on diversification has long emphasized the importance of economies of scale/scope (Teece, 1982; Chatterjee, 1986; Wernerfelt and Montgomery, 1988). The assumption underlying the economies of scale argument is that the diversification decisions are efficiency-driven. Firms diversify into other industries to make better use of certain resources or asset bundles (Penrose, 1959; Rumelt, 1982). Transaction cost theory also starts with the premise that market buying options already exist and firms can choose the most appropriate organizational form that aligns with the attributes of the transaction (Williamson, 1991). Firms often conduct

vertical integration when the coordination cost of in-house production is lower than the transaction costs involved in buying from the market (Williamson, 1975).

In emerging markets, however, entrepreneurs often face very limited buying options in the marketplace. Once the industry becomes more developed, specialization starts and firms can focus on a specific niche market. When the industry is still at an early stage of development, the entrepreneur often has to make upstream and downstream products in a collective effort to deliver an end product to customers. This results in the founding of multiple ventures. Due to the limited market size often associated with a young industry, the number of upstream suppliers and downstream distributors may also be limited. For instance, from the suppliers' point of view, there may not be a sufficient level of market demand and profitability for them to enter a new market. If there is only a small number of firms the supplier firm can serve, the investment needed to enter the market may become too high while the potential revenue is too low for the supplier firm to make a profit. Facing the limited number of suppliers and distributors, the entrepreneur is often forced to produce various upstream and downstream products in-house.

For entrepreneurial firms operating in relatively mature industries, the need for entrepreneurial firms to create highly customizable products is often greater than incumbent firms due to the scale advantage enjoyed by large, established firms for producing standardized products. To create a niche market and establish themselves in a competitive marketplace, tailoring toward a particular customer need by offering more customized products may improve the entrepreneurial firm's chances of survival. A high level of customization often leads to the production of more specific products, requiring highly specific assets that cannot be easily deployed elsewhere. The lack of buying options could originate from the fact that the investment required to invest in specific assets may make it not worthwhile for upstream and downstream

firms to enter. Buying standardized products from the market will not meet the higher level of quality and specificity needed by the entrepreneurial firm, highlighting the need to diversify into supportive businesses.

Market thickness is defined as the number of participants (supplier and consumer) in a given market. A thicker market often means that the market size is larger and more participants exist, such that a match between a supplier and a consumer can be made more easily (Pirrong, 1993; Li and Netessine, 2020; Bimpikis et al., 2020). Whether the entrepreneurial firm is operating in an industry in its early developmental stage or the entrepreneur is carving out a niche market within a well-developed industry, the level of market thickness is relatively low in both cases. Therefore, in the entrepreneurship context, efficiency of the use of resources may not be the only reason why firms choose to expand their boundaries. The lack of specialization within an industry and limited buying options are important reasons for entrepreneurs to choose to “make” rather than “buy”.

Imagine that before tapping into the intermediate market, the entrepreneur’s existing venture produces product A which requires three inputs. Input 1 and input 2 can both be bought from the market while input 3 needs a significant amount of customization and is only available through internal production. The entrepreneur realizes that there is demand among other firms to use input 3 as an input in their production. The entrepreneur exploits this B2B opportunity and markets input 3 as product B. Because the entrepreneur is already using input 3 to produce product A, the production of product B can be done using existing resources, such as production facilities, technologies, and skilled employees. In this way, operational synergies are created as a result of exploiting B2B opportunities in a thin market.

The steel industry provides some real-world examples of the process described above. Steel firms, such as ArcelorMittal and Nucor firms, have a presence in both the intermediate market and the downstream markets (Conti et al., 2019). Intermediate markets are where upstream suppliers provide intermediate products and services to downstream firms. ArcelorMittal has downstream operations in the construction industry but also sells a broad range of finished and semi-finished carbon steel products and stainless steel products to other firms (ArcelorMittal, 2009). In this way, ArcelorMittal leverages economies of scale because the production of high strength steel can be utilized both as structural products for construction of buildings and bridges and as an end product by itself that can be sold to firms that use high strength steel in various industries, including other competitors in the construction industry. Thus, when a market is relatively thin, it is likely that the entrepreneur will engage in starting multiple businesses in order to fill the void in the market and deliver a final product.

Hypothesis 4: For entrepreneurs who operate in a marketplace characterized by low market thickness (thin market), they are more likely to become synergistic portfolio entrepreneurs rather than non-synergistic portfolio entrepreneurs.

5.2. Data, Variables and Method

Chapter 3 provided a detailed description of the construction of the sample used. This section will focus on the operationalization of the constructs mentioned in the hypotheses.

Dependent Variable. The dependent variable in this analysis is a composite measure of synergy. As discussed in Chapter 4, three types of synergy creation are present in the qualitative sample of PEs, namely 1) operational synergy created from sharing of common resources and vertical integration, 2) demand-side synergy through complementary product offerings, and 3) financial synergy created through risk reduction and income cross-subsidization. The composite measure

used in the quantitative sample reflects these three types of synergy and is calculated by averaging responses given to the following question: “When the new business is added, please rate to what extent the addition of the new business has the following effects on your other business(es): 1) cost reduction 2) revenue increases 3) risk reduction”. Respondents were asked to rate each of the effects using a 5-point scale, where 1 represents “very small effect” and 5 represents “very large effect”. The effect of cost reduction is meant to reflect the extent of operational synergy that exists between the new business and the established business because operational synergy often results in reduced costs due to more efficient utilization of resources (John and Harrison, 1999; Markides and Williamson, 1996). The effect of revenue increases captures demand-side synergy because the offering of complementary products often leads to increases in revenue (Priem et al., 2012). Finally, the question of risk reduction captures the extent of financial synergy. Although in the hypotheses, PEs are categorized into two distinct types for a cleaner theoretical discussion, I chose to use a continuous measure to capture synergy because it is likely that the degree of synergy creation varies from portfolio to portfolio and a spectrum exists between the two extremes (0% and 100% synergy). Using a continuous measure is likely to better mirror reality and is more inclusive in nature.

There are a few reasons for using a self-reported measure of synergy instead of using existing measures of synergy. In previous studies, synergy has often been operationalized in terms of performance improvement (Davis and Thomas, 1993). However, this measurement practice is problematic because equating synergy with outcome improvement makes the relationship between synergy and outcome variables (often firm performance) tautological because the independent variable synergy itself is defined in outcome terms. Instead of equating synergy with performance improvements, some scholars have examined potential sources of

synergy instead. Resource relatedness³⁹ has been identified as one source of synergy in the strategic management literature and has been widely used to proxy for synergy (Wrigley, 1970; Rumelt, 1974). Relatedness is then proxied by SIC linkages in empirical studies (Montgomery 1982, Palepu 1985).

However, there are four limitations of using sources of synergy as the basis of a measure of synergies. First, although the aforementioned literature may offer some mechanisms through which synergies can be realized, it is hard to come up with an exhaustive list of potential mechanisms and there may exist uncovered sources of synergies between businesses. Using self-reporting of individuals as synergistic or non-synergistic PEs partially mitigates this problem because the entrepreneur may be the only person who truly understands how businesses are interconnected in his or her portfolio.

The second limitation associated with using source of synergies is that it only measures the potential synergies that can be leveraged, not the actual realization of synergies. Although it has been assumed that potential synergies will automatically translate into actual synergies, in reality implementation difficulties often prevent firms from exploiting potential synergies that exist across businesses (Tanriverdi and Venkatraman, 2005; Nayyar, 1992). Using potential synergies to proxy for actual synergies may therefore bias the empirical results (Tanriverdi and Venkatraman, 2005). For example, if a lack of actual synergies leads to poor performance, do we attribute the poor performance to the lack of synergies or to the inability of the entrepreneur to effectively realize potential synergies that exist across businesses?

Third, it is difficult to account for different forms of synergies in different industries. Manufacturing industries and service industries may differ significantly in terms of sources of

³⁹ Relatedness has been defined as the logic and extent by which a firm's different lines of business (or industries) are connected (Farjoun, 1984).

synergies. For instance, technological relatedness has been identified as a source of synergy and is operationalized using patent data in manufacturing industries; however, patenting is rarely used in service industries (Tanriverdi and Venkatraman, 2005; Robin and Wiersema, 1995; Silverman, 1999). Using a self-reported, direct measure of synergy rather than sources of synergy avoids this issue and allows for a more inclusive operationalization.

Last but not least, from a practical standpoint, it is cognitively tiring for respondents to go through a long list of potential sources of synergies. In order to not lose too many respondents and to limit the cognitive burden imposed on them, I chose to ask them to be the judge for the existence of synergy in their portfolios.

There are a few limitations of using a self-reported measure of synergistic or non-synergistic PEs. First, respondents may have different perceptions about what synergies are. They may classify any type of connections among businesses as synergy. To combat this problem, I included three criteria as part of the question. Respondents were asked to rate to what extent adding the new business 1) increases sales, 2) decreases costs, or 3) decreases risks of the existing businesses. Although by including these criteria, I may be able to limit the respondents' tendency to overstate the existence of synergy, I cannot eliminate this possibility.

Second, self-reported measures may be subject to social desirability bias which is the tendency to answer questions in a manner that will be viewed favorably by others. This problem may be less severe in this case because it is unclear whether synergy creation is a socially desirable behavior. Nevertheless, if being synergistic is considered to be "good behavior" and non-synergistic to be "bad behavior", respondents may want to justify their decision of starting multiple businesses by stating that there exists synergy, inflating the percentage of synergistic PEs in my sample. However, by making the survey completely anonymous, I minimize social

desirability pressures and decrease the respondents' motivations to distort their responses (Bradburn, Sudman, Blair, and Stocking, 1978).

Independent Variables. Four independent variables are included in the analysis to test the four hypotheses. The first independent variable is a measure for product complexity. This measure is obtained by asking the respondents, "How many different disciplines are required to produce the product or deliver the service in your primary business?" To obtain higher response rates, ranges⁴⁰ were presented to respondents and continuous variables were later created by using the lower bound of each range. This measure has been used in previous research to capture product complexity (Barclay and Dann, 2000).

The second independent variable is a measure for technological versatility. This measure is obtained by asking the respondents about the number of markets to which the specific technology used in their primary business can be applied, a measure that has been used to proxy for generality⁴¹ of a certain technology (Conti et al., 2019). To solicit more responses, ranges were provided⁴² and a continuous measure was created by using the lower bound of each range.

The third independent variable is a measure for the relative proportion of the employees' general human capital. This measure is calculated as the general human capital as a percentage of overall human capital (sum of general and specific human capital)⁴³, as shown below:

$$\text{Proportion of employees' general human capital} = \left(\frac{\text{General Human Capital}}{\text{Specific Human Capital} + \text{General Human Capital}} \right)$$

$$\text{Proportion of employees' specific human capital} = \left(\frac{\text{Specific Human Capital}}{\text{Specific Human Capital} + \text{General Human Capital}} \right)$$

⁴⁰ The following ranges are given: 1-2, 3-4, 5-6, 7-8, 9-10, and more than 10 disciplines.

⁴¹ Generality is conceptualized as the extent to which resources can be more easily reconfigured for alternative uses, such that they produce higher excess capacity potentially deployable in multiple businesses (Conti et al., 2019; Helfat and Eisenhardt 2004)

⁴² Ranges given were: only 1 market, 2-3 markets, 4-5 markets and more than 5 markets.

⁴³ Because H3b tests the effect, testing H3a will automatically generate results for H3b as the relative proportion of general human capital and the relative proportion of specific human capital sum up to 1.

The measure of general human capital is obtained by asking respondents about the typical employee's⁴⁴ number of years of education, a measure that has been widely used in prior research (Unger, Rauch, Frese and Rosenbusch, 2011; Ucbasaran et al., 2008). The measure of specific human capital is obtained by asking for the typical employee's number of years of same-industry experience (Bosma, Van Praag, Thurik and De Wit, 2004).

Finally, the fourth independent variable is a measure of market thickness. Respondents were asked, "Please think about the new business now, do you agree to the following statement? 'There are usually few potential buyers/sellers for the product/service that I am producing/delivering.'" This measure was developed by Agrawal, Cockburn and Zhang (2015) to capture market thickness. The responses were then transformed into a binary variable where a thick market is assigned a value of 1 and thin market is assigned a value of 0. For example, if the respondent answered "yes" to the above statement, then he or she is operating in a thin market and the binary measure will equal 0.

Because both the independent and dependent variables are collected using the same survey questionnaire, it is possible that common method bias may be a problem. To lessen the potential common method bias, I made sure that the scales for the independent and dependent variables were different when designing the survey. For the dependent variable, I used a 5-point scale whereas for three of the four independent variables (product complexity, technological versatility and proportion of employees' general human capital), I used range variables. For the fourth independent variable, market thickness, a binary scale was used. In addition, I ran a Harman's single factor test and the result showed that the unrotated first factor only explains

⁴⁴ Typical employees at the primary business

19.9% of the total variance, which is far below the threshold of 50% (Podsakoff and Organ, 1986), providing some evidence that common method bias is less of a concern.

A number of control variables are included. Industry groups refer to the industry in which the PE's primary business operates. I used the most recent industry classification for national economic activities (2017) in China to identify industry groups. Prior studies have shown that PEs' human capital (education, entrepreneurial experience) plays an important role in their opportunity identification and exploitation, as well as resource acquisition (Ucbasaran et al., 2008; Westhead et al., 2009). Thus, I included the entrepreneur's prior entrepreneurial experience and number of years of education as controls. In addition, because prior qualitative research has identified that portfolio entrepreneurship is particularly important for family businesses (Iacobucci and Rosa, 2010; Sieger et al., 2011; Akhter et al., 2016), I included a dummy variable indicating whether one of the current ventures is a family business. Other demographic background indicators, such as the entrepreneur's age, gender, marital status, and number of children, are also included. Gender equals 0 if the entrepreneur is male and 1 if the entrepreneur is female.

The method used to test the hypotheses is ordinary least squares (OLS) regressions. Robust standard errors were used in order to ensure that OLS remains unbiased with the presence of heteroskedasticity in error terms.

Summary Statistics

Table 5.2 presents the summary statistics of the sample. As shown in the table, the synergy measure has a mean of 2.83, suggesting that a higher percentage of PEs consider themselves "synergistic". The average for product complexity is 3.3, indicating that around 3 disciplines are used in the development of products at the primary businesses run by the PEs.

Technological versatility has a mean of 2.93, suggesting the technology used at the PE's primary business can be applied to 3 markets on average. The relative proportion of employees' general human capital has an average of 0.77, implying that a typical employee working at the PE's primary business has spent most of their time in education rather than obtaining industry-specific experience, on average. Most entrepreneurs sampled seem to operate in a relatively thick market because 78% responded "no" to the statement that "there are usually few potential buyers/sellers for the product/service that I am producing/delivering".

Regarding the background of PEs sampled, on average, PEs have spent around 16.7 years in education, which corresponds to having bachelor's degrees. The average age of entrepreneurs sampled is 41, comparable to an average of 41.72 reported in a prior study of Chinese entrepreneurs (Su et al., 2019). However, it seems that female entrepreneurs are underrepresented in my sample because only 20% of entrepreneurs are female, which is much lower than the 36% reported by Chu et al. (2011). PEs in my sample have about 10 years of entrepreneurial experience and they tend to be married and have at least one child, on average. Around 28% of companies sampled are in manufacturing, 20% are in IT and business services, and around 9% are in the wholesale and retail industries.

Table 5.1. Summary Statistics

	Mean	Standard deviation	1	2	3	4	5	6	7	8	9	10	11	12
1. Synergy measure	2.83	1.25	1.00											
2. Product complexity	3.30	2.06	0.27	1.00										
3. Technological versatility	2.93	1.69	0.12	0.31	1.00									
4. Workforce's general human capital (%)	0.77	0.09	-0.05	-0.08	-0.10	1.00								
5. Market thickness	0.78	0.41	-0.10	0.11	0.10	0.30	1.00							
6. Entrepreneur's Education	16.68	2.26	0.07	0.03	-0.04	-0.07	-0.10	1.00						
7. Entrepreneur's age	41.21	8.04	-0.02	-0.10	0.08	-0.08	0.01	-0.34	1.00					
8. Entrepreneur's gender	0.20	0.40	0.20	0.11	0.10	0.00	0.03	0.02	-0.22	1.00				
9. Entrepreneurial experience (in years)	10.11	6.87	-0.00	0.03	0.14	-0.24	-0.20	-0.19	0.60	-0.25	1.00			
10. Entrepreneur's Marital status	0.93	0.27	0.02	-0.00	-0.04	-0.00	-0.03	-0.23	0.37	-0.09	0.23	1.00		
11. Entrepreneur's number of children	1.36	0.96	0.23	0.03	0.17	0.01	-0.03	-0.20	0.35	-0.16	0.37	0.41	1.00	
12. Family firm?	.13	0.33	0.18	-0.09	0.02	0.09	-0.08	0.09	0.03	-0.19	0.02	-0.04	0.13	1.00

Table 5.2. Results from OLS Regressions

	1	2	3	4	5
	Synergy	Synergy	Synergy	Synergy	Synergy
Product complexity		0.151* (0.079)			
Technological versatility			0.0379 (0.0957)		
Workforce's human capital				-1.034 (1.753)	
Market thickness					-0.365 (0.404)
Entrepreneur's education (years)	0.071 (0.070)	0.066 (0.069)	0.067 (0.073)	0.067 (0.073)	0.066 (0.070)
Entrepreneur's age (years)	0.002 (0.026)	0.008 (0.026)	0.003 (0.027)	0.003 (0.027)	0.008 (0.027)
Entrepreneurial experience (years)	-0.000 (0.024)	-0.001 (0.022)	-0.001 (0.024)	-0.005 (0.026)	-0.010 (0.024)
Gender	0.760** (0.342)	0.729** (0.315)	0.732** (0.355)	0.756** (0.343)	0.738** (0.340)
Marital status	-0.348 (0.635)	-0.413 (0.675)	-0.319 (0.653)	-0.343 (0.622)	-0.397 (0.614)
Number of children	0.364** (0.169)	0.338** (0.144)	0.351** (0.174)	0.372** (0.173)	0.376** (0.169)
Family firm	0.494 (0.411)	0.473 (0.375)	0.483 (0.415)	0.522 (0.395)	0.439 (0.393)
Industry: Wholesale and retail	0.455 (0.566)	0.523 (0.530)	0.473 (0.566)	0.446 (0.554)	0.524 (0.545)
Construction	1.574*** (0.476)	1.299*** (0.364)	1.588*** (0.481)	1.654*** (0.480)	1.730*** (0.497)

IT	0.113 (0.588)	0.135 (0.627)	0.0846 (0.605)	0.150 (0.602)	0.192 (0.586)
Business services	-0.788 (0.523)	-0.863* (0.509)	-0.776 (0.526)	-0.697 (0.540)	-0.693 (0.567)
Real estate	-0.171 (0.617)	-0.404 (0.614)	-0.172 (0.618)	-0.135 (0.654)	0.011 (0.659)
Utility	-0.573 (0.519)	-0.175 (0.525)	-0.542 (0.524)	-0.543 (0.519)	-0.416 (0.548)
Mining	1.131* (0.581)	1.221** (0.530)	1.152* (0.580)	1.343* (0.733)	1.347** (0.618)
Accommodation and restaurants	-0.259 (0.386)	-0.187 (0.387)	-0.250 (0.389)	-0.317 (0.394)	-0.086 (0.407)
Other	-0.037 (0.341)	-0.071 (0.330)	-0.057 (0.354)	0.032 (0.348)	0.010 (0.350)
Constant	1.167 (1.898)	0.640 (1.960)	1.057 (1.956)	1.963 (2.386)	1.358 (1.896)
Observations	80	80	80	80	80
R-squared	0.285	0.339	0.287	0.289	0.296

Notes: *** p<0.01, ** p<0.05, * p<0.1

Industry categories reflect self-reported industries of the primary business (i.e. the business that is generating the highest profits at the time of survey). The base industry is manufacturing.

5.3. Results

Table 5.2 summarizes results from running OLS regressions. Column 1 is the baseline model where the dependent variable, synergy measure, is regressed on only control variables. Column 2-5 presents results for testing H1-H4, respectively. H2, H3, and H4 are not supported while H1 receives only partial support because the coefficient for product complexity is only significant at a 10% significance level. As predicted in H1, product complexity is positively correlated with the PE being a synergizer, possibly due to the expanded possibilities of achieving economies of scale/scope through using the same inputs. After standardizing the coefficient, a one standard deviation increase in product complexity is shown to lead to a 0.25 standard deviation increase in the synergy measure.

Although I did not find statistically significant result for H2, H3, and H4, the direction of signs of the coefficients is the same as predicted in the hypotheses. The coefficient for technological versatility is positive, suggesting that a more versatile technology used at the existing business is associated with the PE's tendency to build synergy across businesses. As shown in Column 4, the relative proportion of employees' general human capital is negatively associated with one becoming a synergizer, indicating that general human capital of the workforce is conducive to discovering opportunities in more distant fields, as argued in H3a. The flip side (H3b) is also supported; a high relative proportion of specific human capital of the workforce increases the entrepreneur's likelihood of becoming a synergizer because more related opportunities can be recognized. The direction of sign for market thickness is negative, suggesting that when operating in a thin market in which buyers and sellers are relatively hard to

find, PEs are more likely to become synergizers and engage in multiple businesses to ensure the delivery of a final product/service.

In terms of control variables, the construction industry is highly significant for all model specifications. However, only 4% of the sample are in the construction industry, suggesting that the result is driven by a very small subset of the sample. Gender is positive and significant at the 5% level for all models, suggesting that female PEs are more likely to create synergies between their businesses than their male counterpart.

5.4. Discussion

The results from OLS regressions supported H1, suggesting that product complexity is an important product-level factor to consider when looking at whether PEs attempt to create and leverage synergy at the portfolio level. This finding lends support to the conjecture that high product complexity leads to higher potentials of exploiting economies of scope. A possible mechanism is that new combinations of existing inputs could lead to innovations that eventually become new products. Prior works have suggested that PEs are more willing to experiment with new ideas and engage in innovative activities (Robson et al., 2012) and an established venture can serve as an incubator for new ideas and experimentation (Baert et al., 2016). Although the current analysis cannot say anything about the direction of causation, it implies that portfolio entrepreneurship and innovative activities are likely to be correlated and suggests that innovation may not only be an outcome of portfolio entrepreneurship, but also a reason why portfolio entrepreneurship emerges in the first place. The finding presented here highlights that product complexity may be an important dimension to consider when looking at the relationship between PEs and innovations.

The lack of support for H2, H3, and H4 might be attributed to the small sample size. The amount of variation for the relative proportion of employees' general human capital (standard deviation=0.09) is low, reducing the statistical power of the analysis, which is the probability that the test correctly rejects the null hypothesis when the null hypothesis is false (Button, Ioannidis, Mokrysz, Nosek, Flint, Robinson and Munafo, 2013). Low powered studies tend to have a reduced chance of finding true effects (Button et al., 2013) and the lack of significant results for H2, H3, and H4 may not mean that the hypothesized relationships are absent in the true population. It is also possible that measurement errors are present in the analysis because the three independent variables used in H2, H3, and H4 are single-item measures. Although single-item measures are widely used in management research, it is likely that a single measure does not capture everything that is meant by a construct (Fuchs and Diamantopoulos, 2009; Peter, 1981). Recent findings by Meijer, Oczkowski and Wansbeek (2020) showed that the presence of measurement errors makes it harder to detect a significant relationship between the variables. The hypothesized relationships may not be reflected in the empirical analysis due to these potential measurement problems.

The findings presented in this chapter contribute to the literature on PEs by delineating two subgroups within PEs. This categorization represents one way of slicing the group into finer divisions and looking at differences among PEs. Unlike previous research that compares PEs to other types of entrepreneurs (serial and novice entrepreneurs), this chapter examines how PEs can face very different circumstances and establish multiple businesses for different purposes. Researchers studying PEs have mostly focused on individual-level factors, such as the entrepreneur's human capital (Ucbasaran et al., 2008), social capital (Alsos et al., 2014), cognitive biases (Ucbasaran et al., 2010), personal attitude to entrepreneurship (Westhead and

Wright, 1998), and so on. This chapter highlights that the decision to become a PE is also influenced by venture-level (technology versatility and human capital of existing workforce), product-level (product complexity), and industry-level (market thickness) factors. Recognizing that the presence of the aforementioned factors induces the simultaneous establishment of multiple ventures provides an additional explanation for the existence of PEs.

The majority of literature on diversification examines the diversifying decisions made at large, well-established firms (Kim et al., 2013; Miller, 2004, 2006; Silverman, 1999; Hitt et al., 1994; Montgomery, 1994). Mature firms and entrepreneurial firms differ significantly because resources are often more constrained and uncertainties associated with the product market are higher for entrepreneurial firms. It can be argued that entrepreneurs' decisions are more likely to be bounded by contextual factors. Examining how PEs tap into additional markets and how both internal and external contextual factors influence their decisions extends the literature on diversification strategies. Internal factors analyzed in this paper include technological versatility, product complexity, and human capital of the workforce, whereas external factor refers to the construct of market thickness. Contextualizing the decision of diversification in the entrepreneurial setting could therefore potentially lead to a more comprehensive view of diversification strategies.

There are a number of limitations. Because I relied heavily on snowball sampling, the lack of representativeness of the sample may be a major limitation of this study. Snowball sampling may limit the validity⁴⁵ of the sample because participants are not randomly selected and are selected based on social connections instead (Browne, 2005). In addition, snowball samples will be biased towards the inclusion of more socially connected individuals, leaving out

⁴⁵ Deals with the question "are we measuring what we think we are measuring" (Van Meter, 1990)

isolated individuals (Van Meter, 1990). Thus, I cannot make the claim that results presented in this chapter can be generalized to the entire population of PEs.

Results presented in this chapter are exploratory in nature and a longitudinal sample is needed to explore the direction of causality and make more meaningful empirical contributions. Because the current sample is cross-sectional, individual-level and firm-level time-invariant characteristics cannot be controlled for as in panel data analyses. I was unable to control for external changes that may have imposed particular challenges on businesses and individuals in a given year by including year fixed effects. Using simple OLS to test the hypotheses, I am unable to make causal claims and results presented can only be seen as evidence for correlational relationships. Administering follow-up surveys in the next few years to build a panel dataset may help alleviate the problems identified thus far.

Conclusion

In this chapter, I proposed four hypotheses that help explain why individuals choose to become one type of PE instead of the other, based on a distinction made in Chapter 4 between synergistic and non-synergistic PEs. Using the quantitative sample collected in China, I tested H1-H4 using simple OLS regressions. I discussed how my findings generate insights and enhance our understanding of PEs. Finally, I outlined some limitations of the current study. In the next chapter, I will explore how synergizers and non-synergizers differ when hiring top managers and relate such differences to their job satisfaction.

Chapter 6.⁴⁶ Findings from Quantitative Sample (Study 2)

As shown in previous chapters, PEs can be subdivided into synergizers and non-synergizers. In this chapter, we relate this distinction to PEs' decisions to hire experienced top business managers, whose management of portfolio ventures adds financial and non-financial value to the PE, thereby increasing their job satisfaction. We predict that experienced top managers can generate valuable benefits that 'spill over' to other ventures in the portfolio if synergies exist, increasing the attractiveness of such managers to synergizers. Using the quantitative sample, we provide evidence that compared to non-synergizers, synergizers tend to hire more experienced business managers, a decision that ultimately leads to higher PE job satisfaction.

6.1. Motivations for Studying PEs' Hiring of Top Managers

Prior research has identified several motives for becoming a PE, including diversifying business risks (Carter, 1998; Parker, 2014), leveraging operating efficiency and economies of scale (Carter and Ram, 2003), overcoming diminishing marginal returns to capital (Carbonara et al., 2019), capitalizing on superior opportunity recognition and exploitation abilities (Ucbasaran, Westhead and Wright, 2008, 2009), deploying surplus capital into new growth markets (Scott and Rosa, 1996), and redeploying assets from failed experiments into other businesses (Santamaria, 2021). Running several businesses simultaneously can generate substantial economic value—consider, for instance, the cases of Richard Branson, Elon Musk and Peter Thiel, to mention but a few famous examples. Evidence shows that compared with novice and serial entrepreneurs, PEs tend to enjoy higher sales and productivity (Shaw and Sørensen, 2019;

⁴⁶ Chapter 6 is joint work of my supervisor Prof. Simon Parker and myself.

Santamaria, 2021), achieve higher growth rates and operate for longer (Alsos and Kolvereid, 1998; Rosa and Scott, 1999; Lechner and Leyronas, 2009; Iacobucci and Rosa, 2010; Carbonara et al., 2019)⁴⁷, are more innovative, and exhibit greater propensities to export (Robson et al., 2012).

However, with these advantages come numerous management challenges. It is difficult enough to found and operate one venture, let alone found and operate several different ventures at once. Given limited entrepreneurial time and attention (Gifford, 1998; Folta et al., 2010; Ren and Guo, 2011), the puzzle is how PEs manage to pull it off. The current literature provides little in the way of answers beyond a general notion that PEs draw on their stocks of human, financial, and social capital (Westhead and Wright, 1998a, 1998b; Wiklund and Shepherd, 2008; Sieger, Zellweger, Nason and Clinton, 2011). Less explored is another possibility: that PEs hire experienced professional managers to run their ventures. In principle, top managers can take on the day-to-day operational oversight of portfolio ventures, leveraging their experience to create business value while freeing up precious time for the PE. Of course, if managerial expertise is expensive, not all PEs may find the benefits worth the costs, in which case, different propensities to hire experienced top managers could be an important source of heterogeneity among PEs.

For these reasons, we investigate the following research question: ‘What types of PE are most likely to hire experienced managers in their new ventures, and what benefits do they obtain from doing so?’ We believe it is important to answer this question for several reasons. First, PEs comprise 10-20% of all entrepreneurs according to several cross-section studies (Westhead and Wright, 1998a, 1998b; Westhead, Ucbasaran and Wright, 2005; Santamaria, 2021). They are

⁴⁷ It is important to distinguish between the longevity of portfolio entrepreneurs on one hand, and the survival of new ventures which are added to their portfolios on the other. Some evidence suggests the latter may be lower than that of novice entrepreneurs (Gottschalk et al., 2014; Santamaria, 2021).

known to be significant wealth creators, and their hiring decisions are of considerable social and economic importance as well as being of enduring theoretical interest. Previous research has shown that PEs tend to enjoy higher sales and full-time employment growth rates, compared to entrepreneurs running only one business at a time (Westhead, Ucbasaran and Wright, 2003, 2005). A better understanding of how PEs manage their ventures, including in terms of their hiring decisions, promises to open the black box of value creation by PEs. Second, it enables us to move beyond prior research that has compared PEs as a monolithic group with serial and novice entrepreneur groups (e.g., Westhead, Ucbasaran and Wright, 2005; Westhead and Wright, 1998a, 1998b) by exploring hitherto unexplored dimensions of heterogeneity among PEs.

This chapter focuses on one salient dimension of heterogeneity of PEs: namely, whether the addition of a new venture to a business portfolio achieves synergies with the other businesses in the portfolio. Drawing on prior research on complementarities between businesses (Larsson and Finkelstein, 1999; Harrison, Hitt, Hoskisson and Ireland, 2001), synergistic businesses are defined as those that create greater aggregate value when managed as part of a portfolio than managed separately. We distinguish between synergizers and non-synergizers and theorize about which type is more likely to hire experienced business managers, as well as what benefits they are likely to obtain from doing so.⁴⁸ The main predictions of the theory are tested using a quantitative sample of PEs from China. In the process, we make several novel contributions to the broader entrepreneurship literature.

⁴⁸ It is important to distinguish between two resource-sharing mechanisms: intertemporal economies of scope (or resource redeployment) and intratemporal economies of scope, also known as synergy (Lieberman et al., 2017). Santamaria (2021) focuses on the first of these, while we focus on the second; hence, our studies are complementary.

First, we expand the theoretical literature on portfolio entrepreneurship, a topic on which only limited theorizing currently exists.⁴⁹ At the core of our theorizing is the distinction between synergizers and non-synergizers, which helps us explore how interconnections between businesses—a portfolio-level characteristic—affects individual PEs’ decisions to hire experienced managers. We believe that the synergistic angle is a novel one that can help us to better understand how PEs manage their ventures, thereby opening up a fruitful line of theorizing about portfolio entrepreneurship.⁵⁰

Second, our work extends the entrepreneurial human resource management (HRM) literature by exploring how the industry experience of top business managers can generate benefits for synergizers. Top managers play a key role in portfolio ventures, with entrepreneurs delegating responsibility to them to leverage their experience to generate financial and non-financial value for the PE, thereby potentially enhancing their job satisfaction. There is growing recognition that managing human resources is critical for entrepreneurial ventures (Moser, Tumasjan and Welp, 2017; Leung, Foo and Chaturvedi, 2013; Katz, Aldrich, Welbourne and Williams, 2000). In contrast, the role of experienced managers employed by entrepreneurs has

⁴⁹ Notwithstanding important contributions from Baert, Meuleman, Debruyne & Wright (2016), Sieger, Zellweger & Nason (2011), Wiklund & Shepherd (2008) and Santamaria (2021). Baert et al. (2016) examined the role of resource orchestration across a portfolio of businesses in the process of exploring and exploiting opportunities. Sieger et al. (2010) established a categorization of human capital and social capital that drive the process of portfolio entrepreneurship. Wiklund & Shepherd (2008) theorized about the antecedents of portfolio entrepreneurship as well as the mode of organization chosen to pursue new business opportunities. Santamaria (2012) explored how intertemporal redeployment of resources allows portfolio entrepreneurs to make quicker termination decisions when facing negative market signals and thereby achieve superior performance, compared to single-business owners. Finally, see Parker (2014) and Carbonara et al. (2019) for theoretical occupational choice models in which portfolio entrepreneurship can endogenously arise. Risk diversification is the theoretical mechanism for the first of these papers, while diminishing returns to capital is the driver in the second.

⁵⁰ The alliance portfolio literature is a different but related research stream that analyzes inter-firm alliances designed to facilitate cross-firm resource exchanges and sharing, as well as co-development or provision of products, services, or technologies across firms. It uses network theory as its main theoretical underpinning (Jiang, Tao & Santoro, 2010; Lavie and Miller, 2008; Gulati, 1998). However, this literature typically studies established firms with separate ownership, in contrast to portfolio entrepreneurship.

been relatively overlooked. By analyzing this role, our work adds to the entrepreneurial HRM literature, which in recent years has focused more on founding teams (Zheng, Devaughn and Zellmer-Bruhn, 2016; Hoogendoorn, Parker and van Praag, 2017; Vereshchagina, 2019) and early-stage ‘joiners’ (Roach and Sauermann, 2015; Eesley and Wang, 2017; Kim, 2018).

Third, we provide a novel empirical context in which to study PEs. Most prior empirical research has analyzed only PEs’ most recently added ventures in isolation (lacking data on the other ones) and has drawn data samples from western countries (mainly the US, the UK, and continental Europe). In contrast, our data comes from a major Asian economy, namely China, and our study focuses centrally on how new ventures relate to other businesses already in the portfolio. We believe that this enables us to paint a more nuanced picture of portfolio entrepreneurship, yielding new insights with the potential to advance scholarly knowledge on this important topic.

6.2 Theoretical Framework

Consider a PE who already operates one or more businesses and has just added another new venture to their portfolio. They want to hire a top manager (hereafter called ‘CEO’⁵¹) to take charge of the daily operations of the new venture. The CEO of each business reports directly to the PE, who retains ownership and ultimate control rights over each business. Prior research has identified industry-specific human capital (hereafter, SHC) as a key driver of CEO productivity (Bailey and Helfat, 2003; Castanias and Helfat, 2001; Campbell et al., 2012). SHC is defined as broad industry experience which embodies knowledge related to proprietary technologies, specialized practices for developing unique products in a given industry, and knowledge about

⁵¹ Our preliminary fieldwork revealed that the term ‘CEO’ is widely used by Chinese portfolio entrepreneurs when they refer to top business managers. The alternative term ‘COO’ is much less common, so we decided to use the term CEO consistently in our theorizing, data collection and empirical work.

competitors, customers, suppliers, and other important stakeholders (Gimeno, Folta, Cooper and Woo, 1997; Campbell et al., 2012).

In principle, SHC can be leveraged to add value not just to one venture but to all ventures in a portfolio. Aggregate value-adding potential of CEO SHC (i.e., for the entire portfolio) is likely to depend on the degree of interdependence between ventures. The concept of synergy captures the notion of interdependence; it has been defined as “super-additivity in valuation of business combinations ... synergy means that the valuation of a combination of business units exceeds the sum of valuations for standalone units” (Davis and Thomas, 1993, p. 1334). In the case of portfolio entrepreneurship, we take ‘business units’ to be the businesses comprising the entrepreneur’s portfolio. We define synergizers as those whose businesses create greater aggregate value if managed as part of one portfolio than if they are managed separately. Conversely, non-synergizers are those whose businesses do not create greater aggregate value when managed as part of one portfolio rather than separately.

Below, we first flesh out our notion of synergizers and non-synergizers, focusing on two broad sources of synergy: *complementary products* associated with increased portfolio-level revenues and *related products* associated with decreased portfolio-level costs.⁵² For each source, we discuss how CEO SHC is likely to be more valuable for synergizers than for non-synergizers. We then draw out the benefits of high CEO SHC to the PEs who hire them, before closing with a summary of the relationships implied by our theorizing.

6.2.1. Synergies and Portfolio Entrepreneurship

How do new ventures founded by synergizers attain super-additivity? To answer this question, we draw on the management literature on synergies, which distinguishes between

⁵² Cost reductions from synergies are distinct and separate from economies of scale or scope; see below for details.

complementarity and resource relatedness for creating synergies within organizations (Foss, 1997; Larsson and Finkelstein, 1999; Harrison, Hitt, Hoskisson and Ireland, 2001). Specifically, we argue that PEs can obtain synergies through new ventures by offering either 1) complementary or 2) related products or services to those already provided by other businesses in the portfolio.

First, complementary products or services (hereafter, just ‘products’ for expositional clarity) often serve the same customer base; knowledge of customers is thus a particularly important aspect of SHC in this case. Complementarity is associated with so-called ‘demand side’ synergies, which are designed to generate higher revenues from the firm’s current customer base (Priem, Li and Carr, 2012). Second, and in contrast, related products often use similar inputs, but they may or may not serve the same customer base as the existing products. Knowledge of suppliers is a relatively more important aspect of SHC in this case. Relatedness often involves the sharing of assets and resources; hence, it is associated with ‘supply side’ synergies, which yield cost reductions from the firm’s operations (Ye, Priem and Alshwer, 2012).

We next discuss in greater detail the characteristics and implications of complementary products (‘demand side’ synergies), followed by related products (‘supply side’ synergies).

6.2.1.1. Complementary Products: Demand Side Synergies

When a new venture offers complementary products, knowledge of existing customers can help with positioning to generate extra revenues through demand-side synergies. Customers often need to be convinced that they need a product before purchasing it; managers must therefore understand their customer base to communicate the benefits of any new products. Prior literature (Roberts and McEvily, 2005; Fombrun and Shanley, 1990) suggests that managers

need to focus on two particular issues when products are complementary: cannibalization⁵³ of existing products and legitimacy (or reputation) spillovers between different products. We will discuss each in turn below.

A CEO with higher SHC can leverage their experience to obtain a finer understanding of target consumers, which may not only help accurately position the products of the new venture to maximize sales, but also refine or improve the positioning of the products offered by other businesses in the portfolio. In that way, they can draw out the benefit of synergies. For example, differentiation of existing products may become more distinct and specific when complementary new products are introduced, as entrepreneurs seek to avoid product cannibalization by making their existing products distinct from the new one. In this case, high-SHC CEOs can exploit their superior industry knowledge about broad product spaces to provide revenue-enhancing configurations of multiple products whose complementarities derive from synergies, thereby adding value to the entire business portfolio.

Evidence suggests that CEOs without industry-specific skills are associated with greater variability of subsequent firm performance (Bailey and Helfat, 2003). This can arise if problems in one part of the organization spill over and infect other, connected, parts of the organization. In the context of portfolio entrepreneurship, demand-side synergies between a PE's businesses could lead to negative impacts on one business crossing business boundaries and affecting the sales of PE's other businesses. This could occur, for example, through the loss of a shared customer base, a damaged reputation, or reduced cross-selling. Reflecting their limited industry experience, CEOs lacking SHC are not likely to be as well placed to avoid or contain these problems as CEOs with high levels of SHC.

⁵³ Cannibalization has been defined as “the extent to which one product's sales are at the expense of other products offered by the same firm” (Mason & Milne, 1994, p. 163; see also Copulsky, 1976).

Notably, concerns about this kind of spillover effect will be less salient if a PE's businesses are independent of each other. A lack of synergy helps shield the PE's other businesses from any negative impacts associated with hiring a CEO with low SHC. Hence, compared to non-synergizers, synergizers are likely to suffer revenue losses when hiring a CEO with low SHC.

As well as improving organizational knowledge and practice, hiring a CEO with high levels of SHC may also confer legitimacy upon the enterprise (Zhang and Rajagopalan, 2003). Legitimacy is defined as "a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995: 574). Recruiting a new CEO is a highly visible event that enables firms to communicate their intentions to conform to industry standards (Zhang and Rajagopalan, 2003). Recruiting a CEO with abundant industry SHC sends a positive signal to stakeholders such as investors, employees, customers, and business partners, which might help entrepreneurs acquire resources controlled by those stakeholders and thereby increase sales (Scott, 1995; Suchman, 1995; Zimmerman and Zeitz, 2002). For example, evidence suggests that both perceived legitimacy and underwriters' valuations of IPO firms are influenced by top managers' human capital (Deeds et al., 2004; Westhead, 1995; Chemmanur and Paeglis, 2005).

While legitimacy is important for all new ventures, it may be particularly important for new ventures that are part of a portfolio whose businesses are synergistic. To see why, consider the case of affiliate firms. By affiliating with reliable third parties, new ventures can enhance their legitimacy and effectively reduce uncertainties for investors (Plummer et al., 2016; Gulati and Higgins, 2003; Haunschild, 1994; Podolny, 1994; Rindova, Williamson, Petkova, and Sever, 2005). Customers are known to grant legitimacy to firms based on their better-known network

affiliates (Haack et al., 2014). This raises the possibility of legitimacy or reputation spillovers between ventures in a business portfolio. More generally, low levels of legitimacy or a poor reputation of a new venture may have a negative sales spillover effect on the other businesses due to the close connections between them. Research on business groups has shown that bankruptcy of a member firm often sends a negative signal about the solvency of the entire group, and such negative spillovers result in a significant drop in external financing for the affiliated businesses (Gopalan, Nanda and Seru, 2007). A negative business group reputation can stigmatize affiliated firms (Devers et al., 2009) and hamper the group's internationalization efforts (Mukherjee, Makarius and Stevens, 2018). Negative reputation spillovers have also been observed at the industry level where the bad actions of one or a minority of firms could lead stakeholders to form a negative opinion of an entire industry (Fauchart and Cowan, 2014).

For synergizers who operate in related industries, negative behaviors of one venture can lead to contamination of reputation at the portfolio level. Conversely, when a new venture is independent of the PE's other businesses, the effect of legitimacy (or the lack thereof) can be contained in the new business without affecting the sales of other businesses in the entrepreneur's portfolio. Because hiring a CEO with high levels of SHC can enhance a new venture's legitimacy and reputation, the benefits accruing to other related businesses are therefore expected to be greater for synergizers than for non-synergizers.

6.2.1.2. Related Products: Supply Side Synergies

Relatedness in product offerings can promote 'supply side' synergies via resource sharing among existing and new ventures in a business portfolio (Zhou, 2011).⁵⁴ For example, synergies from related products can arise from sharing manufacturing facilities (John and Harrison, 1999),

⁵⁴ Specifically, we refer below to resources that are productive inputs, rather than Schumpeterian re-combinations associated with innovation efforts (Galunic & Rodan, 1998).

technologies (Silverman, 1999), marketing and advertising campaigns (Davis, Robinson, Pearce and Park, 1992), and managerial (Prahalad and Bettis, 1986; Ilinitch and Zeithaml, 1995) and human resources (Farjoun, 1994). Resource sharing is generally associated with cost reductions. We next discuss two salient channels through which supply side synergies can augment the value of CEO specific human capital (SHC) to the PEs who hire them: judicious choices of input suppliers and exploitation of knowledge about competitors' strategies and practices.

Companies operating in different industries may have different needs when it comes to selecting a supplier. For instance, some require fast procurement while others must prioritize reducing costs. Matching companies' needs with capabilities of suppliers is crucial for the successful delivery of products and services. SHC in the form of prior production experience and knowledge of suppliers may enable the CEO of a new venture to select a supplier best suited to its needs. Similarly, knowledge of downstream distributors can help the new venture select the lowest cost and most suitable distributor to deliver new products and services. To the extent that resources are shared between existing businesses and a new venture in a portfolio, the selection of suitable upstream and downstream partner firms can benefit all businesses in the portfolio by reducing total costs. This amplifies the cost-reducing benefits of hiring a CEO with high SHC, suggesting that these benefits should be greater for synergizers than for non-synergizers.

Second, SHC also includes knowledge of competitors. For example, CEOs with high levels of industry experience tend to know more about the strategies and best practices of other firms in their industry (Boeker, 1997). By adopting best practices, CEOs can imitate and incorporate cost-based efficiencies into their own ventures. The scale of this benefit is most apparent when there is substantial strategy overlap between the other businesses and the new venture in the portfolio because best practices can then be applied across the board. Conversely,

hiring a CEO with low levels of SHC may impede the performance of synergistic businesses. When a new venture that is added to an entrepreneur's portfolio shares resources with other businesses in the portfolio, there is a risk that some of these resources will be reallocated away from the latter, increasing average costs there. For example, Roberts and McEvily (2005) showed how managerial experience can facilitate resource adjustment and reduce the danger of resource cannibalization, as well as the potential negative effects of resource withdrawal on the performance of existing products. Knowledge of competitors' best practices can augment this benefit. In contrast, low CEO SHC may lead to suboptimal decisions over resource transfer and reallocations at the portfolio level, increasing production costs and harming the performance of new and existing businesses in the entrepreneur's portfolio.

As with demand side synergies, negative spillovers from sub-optimal intra-portfolio resource allocation are likely to be less pertinent if a PE's businesses are independent of each other. The lack of shared resources reduces the danger of inefficient cross-business resource reallocation, decreasing any negative impacts associated with hiring a CEO with low SHC. Hence, for this reason as well, synergizers are more likely than non-synergizers to suffer losses when hiring a CEO with low SHC.

To summarize the arguments so far, regardless of the type of synergy, we hypothesize that synergistic portfolio entrepreneurship and the hiring of new venture CEOs are related as follows:

Hypothesis 1: Compared with non-synergizers, synergizers are more likely to hire for their new ventures a CEO possessing high specific human capital.

6.2.2. CEO Selection and Entrepreneurs' Job Satisfaction

Hiring CEOs with high levels of SHC is likely to be expensive, reflecting the scarcity of SHC in the labor market. Hence, to justify the cost of hiring them, the PE must expect tangible benefits in return. We have already discussed how CEO SHC generates benefits to PEs in the form of increased revenues (section 6.2.1.1) and reduced costs (section 6.2.1.2). Because the PE has an ownership stake in their firm, these benefits presumably translate into personal financial payoffs. These payoffs are not only valuable in their own right but might also augment entrepreneurs' job satisfaction (Wiklund et al., 2019).

Job satisfaction can be defined as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences” (Locke, 1976; p. 1300). It is a key outcome variable which influences the decision of entrepreneurs to enter and remain in entrepreneurship (Nikolaev et al., 2020). Job satisfaction has been shown to be influenced by both financial and non-financial factors, both for people in general and entrepreneurs specifically (Judge et al., 2010; Millan et al., 2013). In terms of financial factors, not only are payoffs associated directly with higher job satisfaction but they can also motivate high levels of organizational commitment and psychological attachment towards entrepreneurial ventures (He, 2008; Gimeno et al., 1997, Smith and Miner, 1983). Superior venture performance can therefore act as an objective validator of entrepreneurs' personal attachment to a venture, enhancing their overall job satisfaction for this reason too.

In terms of non-financial factors, PEs may also derive job satisfaction from hiring top managers with high SHC owing to the increase in autonomy this can bring (Bjørnskov and Foss, 2020). Autonomy can be defined as the extent to which an individual can structure and control how and when they perform their job tasks (Hackman and Oldham, 1976; Spector, 1986). If they

do not delegate tasks, entrepreneurs must perform them themselves, taking time away from more pleasurable or productive activities. Delegating these tasks to talented and reliable top managers can increase the entrepreneur’s autonomy by allowing them to focus only on the tasks that are most interesting or important, thereby enhancing their job satisfaction (Benz and Frey, 2008; Lange, 2012). This effect is likely to be especially pronounced for PEs, who operate several businesses simultaneously and so have even more limited time and attention than serial and novice entrepreneurs who run one business at a time (Gifford, 1998).

As noted above, high-SHC CEOs generally enhance the productivity of the businesses they manage (Bailey and Helfat, 2003; Karaevli, 2007). That should increase PEs’ confidence in delegating to them the day-to-day running of their portfolio businesses. The resulting increase in autonomy therefore enhances their job satisfaction for this reason as well. We therefore propose:

***Hypothesis 2:** Hiring a CEO with greater specific human capital is associated with higher portfolio entrepreneur job satisfaction.*

Figure 6.1. Research Model



Notes: Abbreviations: “PE” is portfolio entrepreneur; “CEO” is Chief Executive Officer (top venture manager).

Taken together, Hypotheses 1 and 2 suggest a complete mediation relationship. See Figure 6.1. Here, a CEO’s SHC (‘the mediator’) positively mediates the effect of synergistic portfolio entrepreneurship (‘the independent variable’) on PE job satisfaction (‘the dependent variable’). Note that we do not theorize a direct effect of synergies across businesses on the PE’s

job satisfaction; rather, we expect that the presence of synergies will only affect job satisfaction through the effect of a hired CEO's specific human capital. This is a testable prediction, which we will confront with data below.

6.3. Data, Measures and Method

6.3.1. Data Collection

The detailed sampling procedure is described in Chapter 3. Given a lack of secondary data or a comprehensive business database containing information on PEs in China and low response rates to mailout surveys in China (Roy, Walter and Luk, 2001), our data collection effort eschewed public information sources and general mailout questionnaires in favor of 'snowball sampling' using online questionnaires. Snowball sampling uncovers data that might otherwise be impossible to obtain. Although it can lead to unrepresentative samples, Monte Carlo simulations show that as the number of waves of contacts in a snowball sample increase, any bias from non-representativeness rapidly disappears at a geometric rate (Heckathorn, 1997).⁵⁵

To identify whether someone is a PE, respondents were asked, "Have you founded or cofounded and retained an active role in managing more than one business simultaneously?" If the answer was yes, the respondent was classified as a PE. Note that this question excludes investors who acquired ownership rights to multiple businesses but were not actively involved in their day-to-day operations. We received a total of 337 responses. After eliminating incomplete responses, 302 entrepreneurs remained, of which 105 were PEs. This number exceeds the sample sizes of 75 reported by Westhead and Wright (1998a, 1999b) and 88 reported by Westhead et al.

⁵⁵ We will discuss the implications of snowball sampling for the interpretation of our findings at the end of the paper. The lack of national Chinese registry data on portfolio entrepreneurs who meet the criteria for inclusion in our sample make it impossible to assess the representativeness of our sample, or to construct relevant population weights; we will discuss several caveats relating to this issue at the end of the paper as well.

(2005a, b). Of the 105 cases in our sample, 91 provided data on synergies; of these 91 cases, 77 hired a CEO to run their new ventures.

6.3.2. Common Method Bias

Because our independent, mediating, and dependent variables were all collected using the same survey questionnaire, common method bias may be present in our dataset. We took the following steps to reduce the risk of this bias. First, we attained psychological separation between the independent, mediator, and dependent variables by asking respondents unrelated questions between these items. Second, the scales for the different types of variables were different. We used a binary scale for the independent variable, a range variable for the mediator variable, and a 7-point Likert scale for the dependent variable. Third, we conducted the Harman one-factor test to investigate whether common method variance is a problem (Podsakoff and Organ, 1986). The results show that the unrotated first factor explains only 17.2% of the total variance, well below the threshold of 50% (Podsakoff and Organ, 1986). In addition, we also used the common latent variable method to test for common method bias. The common variance was only 0.0096, or 0.96%, an extremely low value suggesting that common variance bias is not a concern here.

6.3.3. Measures

Dependent Variable. We adapted a 5-item scale originally developed by Andrews and Withey (1976) to measure the *Job Satisfaction* of PEs (see Appendix 1 for the items of this scale). The original scale was designed to measure the job satisfaction of employees; some of the items (e.g. one relating to supervision) do not apply to entrepreneurs, and so were dropped. Respondents indicated their feelings on a seven-point Likert scale (1="Terrible", 7="Delighted"). The

Cronbach's Alpha for the scale is 0.90 which exceeds the 0.80 threshold, indicating that the measure possesses high internal consistency (Robinson et al., 1991, Nunnally, 1967).

Independent Variable. The independent variable, *Synergy*, is a dummy variable which equals 1 if synergy exists between the new business and the entrepreneur's existing businesses, and 0 otherwise. We explicitly asked respondents to identify whether the addition of the newest (i.e. most recently founded) venture helped to reduce costs or increase revenue for the overall portfolio of firms. This corresponds directly to the theoretical sources of synergy discussed in section 6.2.1.⁵⁶

Mediating Variable. The mediating variable is the *Industry Experience* of the CEO hired at the new business. This measure has been widely used in previous research, including as a measure of SHC (Bailey and Helfat, 2003; Cooper, Gimeno-Gascon and Woo, 1994). Respondents were asked: "How many years of industry experience does the CEO have in the industry of the new business?" To increase the response rate, we provided ranges for respondents to easily select their answers; we later converted the ranges into a continuous variable using interpolation. Respondents were reminded that by CEO, we meant the hired manager in charge, excluding themselves.

Control Variables. We included several control variables linked in prior research to entrepreneurs' job satisfaction. These include age (Shore, Cleveland and Goldberg, 2003), the number of years of education (Dawson, 2017), and the number of years of the entrepreneur's industry experience in the industry of the newest business (Kwon and Sohn, 2017). We also included the number of years of entrepreneurial experience (Ostroff and Rothausen, 1997), size

⁵⁶ We chose not to ask respondents to list sources of synergies to avoid the risk of confusing them and losing them from the sample. Also, we were more interested in whether synergies were realized rather than their sources, consistent with Hypothesis 1 and the arguments leading up to it, which posit the same effects for complementary as for related synergies.

of the newest business (Griffin, Patterson and West, 2001; Dawson, 2017), age of the newest business, and a set of variables measuring marital status, the number of children, and gender (Bilgiç, 1998).

Table 6.1 presents the summary statistics of the sample. This shows that 62% of the sample are synergizers and 38% are non-synergizers. The average age in the sample is 41.3 years. The youngest PE is 27 years old while the oldest is 58 years old. 91% of respondents are married, and 75% of the sample are male. The oldest new business was added in 2006 while around 94% were established during the period 2009-2019. The average number of employees for the sampled new business is 91 while the largest firm has 1,800 employees.

To check if multicollinearity is a problem, we calculated the Variance Inflation Factor (VIF) for the independent, mediator, and control variables. All VIF values were below 2, well below the maximum acceptable level of VIF of 10 (Hair, Black, Babin, Anderson and Tatham, 1998). Hence, we proceed on the basis that collinearity is unlikely to be a problem in this study.

6.3.4. Estimation Method

Baron and Kenny's (1986) method has been widely used for testing mediation, whereby the effects of an independent variable X on a dependent variable Y is mediated by some variable M. More recently, Structural Equation Modelling (SEM) has been asserted as a superior approach because it estimates direct ($X \rightarrow Y$) and indirect ($X \rightarrow M$, $M \rightarrow Y$) paths simultaneously, without assuming that these equations are independent, as in Baron-Kenney (Iacobucci, 2008). Through a series of Monte Carlo simulations, Iacobucci (2008) showed that SEM leads to a more precise estimation of path coefficients. In addition, because the dependent variable is job satisfaction, a multi-item scale, SEM is also preferred because it allows latent variables to be included in the empirical specification (Iacobucci, 2008; Mehmetoglu, 2018). Latent variables

are used to represent constructs that have theoretical importance but can only be measured indirectly through multiple indicators that capture different aspects of the constructs (Muthén, 2002).

For these reasons, we used SEM to test whether CEO *Industry Experience* mediates the relationship between *Synergy* among the PE's businesses and his or her *Job Satisfaction*. The model was estimated using maximum likelihood, with all covariates described above. To account for possible heteroskedasticity, we used robust standard errors. Recent studies examining mediation relationships have started to use bootstrapping given its higher statistical power (Zhao et al., 2010; Preacher and Hayes, 2008). Because running the bootstrap test in SEM is rather time-consuming, Monte Carlo simulations were used as an alternative (Jose, 2013). We specified 10,000 as the number of the Monte Carlo replications, as in previous studies using a bootstrapping method to test indirect effects (Oo et al., 2019; Breugst, Domurath and Patzelt, 2012).

Table 6.1. Summary Statistics and Correlations

	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
1. Job Satisfaction	5.32	0.88	1.00											
2. CEO's industry experience (years)	9.53	6.11	0.40	1.00										
3. Synergy dummy	0.62	0.49	0.17	0.37	1.00									
4. Entrepreneur's age (years)	41.29	8.06	-0.25	-0.11	-0.14	1.00								
5. Marital status dummy	0.91	0.26	-0.11	0.21	0.08	0.41	1.00							
6. Gender dummy (male = 1)	0.75	0.44	-0.00	-0.05	0.03	0.23	0.06	1.00						
7. Number of children	1.34	0.96	0.00	0.05	0.12	0.35	0.44	0.17	1.00					
8. Education (years)	16.65	2.35	0.17	0.08	0.28	-0.35	-0.25	0.01	-0.24	1.00				
9. Entrepreneurial experience (years)	10.55	7.04	-0.12	-0.01	-0.05	0.61	0.27	0.30	0.38	-0.22	1.00			
10. PE's Industry experience (years)	8.53	8.66	-0.23	0.12	0.03	0.39	0.22	0.23	0.15	0.06	0.34	1.00		

11. Firm age (years)	3.49	3.43	-0.01	0.03	-0.07	0.11	0.04	-0.07	0.00	-0.22	0.15	0.21	1.00	
12. Firm size (log of # employees)	3.20	1.41	-0.03	0.22	0.20	0.33	0.22	0.23	0.25	0.10	0.44	0.38	0.24	1.00

Notes: Job satisfaction is a latent construct measured using 5 (adapted) items proposed by Andrews and Withey (1976)
PE is 'portfolio entrepreneur'; 'firm age' is the age of the newest venture; and 'firm size' is size of the newest venture in the portfolio.

Table 6.2. Mediation Analysis Using Monte Carlo Replications (Standardized)

	<i>b</i>	<i>SE</i>	<i>p</i> > <i>z</i>	95% confidence interval
<i>Synergy</i> → CEO <i>Industry Experience</i> → <i>Job Satisfaction</i> (Indirect effect)	0.131**	0.062	0.034	[0.029 , 0.269]
<i>Synergy</i> → <i>Job Satisfaction</i> (Direct effect)	-0.013	0.231	0.923	[-0.466,0.440]
<i>Synergy</i> → CEO <i>Industry Experience</i>	0.308***	0.112	0.006	[0.088, 0.528]
CEO <i>Industry Experience</i> → <i>Job Satisfaction</i>	0.439***	0.122	0.000	[0.200, 0.679]

****p* < 0.01. ***p* < 0.05. **p* < 0.1.

6.4. Results

Table 6.2 summarizes the main findings, based on the SEM Monte Carlo method. The first row of Table 6.2 presents the total indirect effect from *Synergy* between the new and established businesses and *Job Satisfaction*. This is positive and statistically significant ($\beta = .131$; $p = .03$). In contrast, the second row shows that the direct effect is statistically insignificant ($\beta = -.013$; $p = 0.92$). The third and fourth rows of Table 6.2 analyze the two components of the indirect paths. We observe a positive and significant indirect effect running from *Synergy* to *CEO Industry Experience* ($\beta = .308$; $p < .01$) and a positive and significant indirect effect running from *Industry Experience* to the entrepreneur's *Job Satisfaction* ($\beta = .439$; $p < .01$). Taken together, the results suggest that the entrepreneur's *Job Satisfaction* is expected to increase by 0.131 standard deviations for an increase in *Synergy* (from 0 to 1) indirectly via *CEO's Industry Experience*⁵⁷. See Figure 6.2 for a depiction. Thus, the CEO's industry experience fully mediates the relationship between synergy across businesses and the entrepreneurs' job satisfaction. This supports both Hypotheses 1 and 2.

Figure 6.2. SEM Model



Notes: The model was estimated with STATA's *SEM* command. Estimation Method: Maximum Likelihood. *** $p < .01$. ** $p < .05$. * $p < .1$.

⁵⁷ The interpretation of effect size is different in mediation models than in regular regression models. Preacher and Kelly (2011) suggested that standardized effect sizes can be interpreted in units of standard deviations in the same way as in regression models with a single independent variable and a single dependent variable that are both standardized. That is, the coefficient can be interpreted as the number of standard deviations that the dependent variable is predicted to increase given an increase of one standard deviation in the independent variable.

Our findings suggest that synergies between new and existing businesses are associated with the kind of CEOs PEs hire. When synergies exist, PEs tend to hire CEOs with relatively high levels of industry experience. In turn, high levels of CEO specific human capital are associated with PEs being more satisfied with their jobs. This finding is consistent with previous evidence showing that specific human capital is associated with better economic performance of ventures (Gimeno et al., 1997; Lerner and Almor, 2002; Bailey and Helfat, 2003) and that financial and non-financial factors (e.g. greater freedom in one's work) contribute to entrepreneurs' job satisfaction (Blanchflower and Oswald, 1998; Benz and Frey, 2008).

Table 6.3. Hiring of CEO (Dummy) as the Mediator

	<i>b</i>	<i>SE</i>	<i>p>z</i>	<i>95% confidence interval</i>
<i>Synergy → Hiring a CEO → Job Satisfaction</i> (Indirect effect)	-0.017	0.037	0.655	[-0.098 , 0.053]
<i>Synergy → Job Satisfaction</i> (Direct effect)	0.061	0.126	0.628	[-0.186, 0.309]
<i>Synergy → Hiring a CEO</i>	-0.053	0.111	0.632	[-0.270, 0.164]
<i>Hiring a CEO → Job Satisfaction</i>	0.309**	0.122	0.012	[0.069, 0.550]

*** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$.

Table 6.4. Mediation Analysis with Bootstrapped Effect Estimates

	<i>b</i>	<i>SE</i>	<i>95% confidence interval</i>

Direct effect	-0.069	0.229	[-0.527, 0.389]
Indirect effect (via CEO <i>Industry Experience</i>)	0.289**	.144	[0.031, 0.591]
Total (direct + indirect effect)	0.186	0.243	[-0.301, 0.672]

*** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$.

Table 6.5. Robustness check, CEO's SHC as a Moderator

	1 Job Satisfaction	2 Job Satisfaction	3 Job Satisfaction
Synergy dummy		-0.069 (0.252)	-0.342 (0.404)
CEO's industry experience		0.068*** (0.018)	0.046 (0.032)
Synergy * CEO's industry experience			0.031 (0.038)
Entrepreneurs' age	-0.011 (0.011)	-0.005 (0.015)	-0.007 (0.015)
Entrepreneurs' marital status	0.142 (0.339)	-0.433 (0.460)	-0.378 (0.450)
Entrepreneurs' gender	-0.041 (0.175)	0.204 (0.212)	0.236 (0.215)
Entrepreneurs' number of children	0.109 (0.093)	0.134 (0.113)	0.140 (0.109)
Entrepreneurs' education	0.010 (0.040)	0.067 (0.066)	0.077 (0.065)
Entrepreneurial experience (years)	-0.013 (0.010)	0.003 (0.016)	0.002 (0.016)
Entrepreneurs' industry experience (years)	0.006 (0.010)	-0.030** (0.014)	-0.028* (0.014)
Firm age	0.015 (0.0165)	0.029 (0.0364)	0.033 (0.0368)
Firm size	0.112** (0.054)	-0.050 (0.088)	-0.059 (0.092)
Constant	4.876*** (0.789)	4.151*** (1.375)	4.146*** (1.369)
Observations	144	68	68
R-squared	0.073	0.302	0.309

We ran five sensitivity tests to check the robustness of the results. First, we tested for possible reverse causality. For example, it is possible that CEOs with higher SHC are better placed to identify synergies, thereby reversing the ordering of the first two elements of Figure 6.1. If there was reverse causality, we would expect a positive and significant indirect effect from CEO SHC to job satisfaction that was mediated by synergies. Running this alternative model generated insignificant results for complete mediation, however ($\beta = -0.004$, $se = 0.044$; $p = 0.928$). At the same time, the coefficient on the path from CEO SHC to job satisfaction remained virtually unchanged from that depicted in Figure 6.2 ($\beta = .434$; $p < .01$). Hence our results appear robust to reverse causality.

Second, we tested for the possibility that it is not the SHC of a CEO but rather just the *presence* of a CEO that mediates the indirect relationship between synergies and PE job satisfaction. To test this possibility, we re-ran the model, replacing the mediation variable with a dummy variable indicating whether or not a CEO operated the newest addition to venture portfolios. Table 6.3 presents the results. As the table shows, neither an indirect nor a direct mediation relationship holds when CEO SHC is replaced as the mediating variable by a dummy variable for whether a CEO of any kind was hired. Interestingly, the final row of Table 6.3 shows that hiring a CEO of any kind does enhance the entrepreneur's job satisfaction; however, the coefficient of 0.309, while statistically significant, is smaller in magnitude than the coefficient of 0.439 linking CEO SHC to job satisfaction. Taking all these results together, we conclude that the CEO's SHC, rather than just their presence, is needed to mediate synergies into higher portfolio job satisfaction.

Third, we reran the analysis using bootstrapped standard errors with 10,000 replications (as recommended by Preacher and Hayes, 2008).⁵⁸ Table 6.4 presents the results. The indirect effect of synergy between businesses on a PEs' job satisfaction via CEO's industry experience remains positive and significant at the 5% level (indirect effect $\beta = 0.289$, 95% CI=[0.031,0.591]). This finding confirms the robustness of the main results because both the direction of the coefficients and statistical significance are consistent with the findings reported in Table 1. Hence, we confirm support for both Hypotheses 1 and 2.⁵⁹

Fourth, we tested whether a moderation relationship could provide an alternative characterization of the synergy-job satisfaction relationship. Table 6.5 presents the results. Column 1 is the baseline model where only control variables are included. Column 2 presents the main effects of synergy and CEOs' industry experience on entrepreneurs' job satisfaction while column 3 includes the moderation effect of CEOs' industry experience. The results show that the moderation effect is not statistically significant, confirming that moderation does not characterize the relationship; moreover, the fact that synergy is not statistically significant in any regression further confirms that synergy does not exert a direct effect on entrepreneurs' job satisfaction.

Finally, we also tested for an interaction between entrepreneur's experience and CEO SHC to test whether they are strategic substitutes in the PE setting. Adding this term to columns

⁵⁸ We followed Preacher and Hayes' bootstrap approach and used PROCESS, which is a computational tool developed by Hayes (2013) to test the significance of the indirect effect. This procedure relies on bootstrapping, a nonparametric resampling procedure, to estimate the path coefficients, standard errors, p-values, and confidence intervals. This is done through repeatedly sampling from the original dataset and estimating the indirect effect in each resampled dataset. For instance, if the number of replications is set to 1,000, PROCESS produces 1,000 estimates of the indirect effect of X on Y using the resampled dataset. A main advantage of this procedure is that it does not rely on the assumption of normality for the indirect effects and it can be used in small samples (Preacher & Hayes, 2004). For example, Cole, Walter, & Bruch (2008) applied this procedure to a sample size of 60. Recent entrepreneurship studies have embraced this method to estimate and test indirect effects in mediation models (P.P Oo et al., 2019).

⁵⁹ While this robustness test confirms our main results, the effect size is different when bootstrapping is used, despite the direction and significance of the hypothesized relationships remaining unchanged. However, since SEM is more appropriate for analyzing latent variables (Hayes, Montoya & Rockwood, 2017), we place greater confidence in the coefficient estimates reported in Table 6.2.

2 and 3 of Table 6.5 generated insignificant results (in both cases, $\beta = 0.002$, $se = 0.002$; $p = 0.84$). In sum, we find our mediation model—and by implication, the theoretical analysis it is based on—to be robust to a battery of empirical tests.

6.5. Discussion

It is hard enough to found and manage one business, yet PEs found and manage several at once. How do they do it and remain satisfied in their work? This chapter explored one mechanism, namely hiring top managers who are responsible for the day-to-day operation of the portfolio businesses. We argued that if these top managers have high levels of specific human capital (SHC), the PE can more confidently delegate tasks to them and thereby generate both financial and non-financial benefits which enhance their job satisfaction. This chapter explored which PEs are likely to prioritize hiring top managers with high levels of SHC and which are not. The main source of heterogeneity we studied was whether new businesses added to a portfolio can realize synergies with other businesses already in the portfolio. Connoting those PEs for which this is the case as synergizers, we predicted that they are more likely than non-synergizers to hire top managers with high levels of specific human capital, which enhances their job satisfaction. We tested our ideas on a sample of PEs from China and found broad support for our predictions.

Our work advances the conceptual literature on portfolio entrepreneurship, broadening it from the work of Wiklund and Shepherd (2008). While Wiklund and Shepherd (2008) studied individual-level antecedents of portfolio entrepreneurship, notably the human and social capital resources of individuals, we discuss product-market and business-level factors associated with synergies. We suggest that complementing individual-level with product- and business-level factors may lay the foundations for a richer analysis of portfolio entrepreneurship. This insight

also applies to Wiklund and Shepherd's (2008) question of whether to organize using a new venture or by adding a new product line to an existing firm's offerings. Noting that the addition of a new venture can increase organizational efficiency, we argue that not only individual resources but also intra-portfolio synergies may bear on entrepreneurs' firm organizing decisions. Further investigation of organizational considerations such as these surely deserve closer attention in future work on portfolio entrepreneurship.

Our work has highlighted the key role of top managers in venture portfolios, which we believe is a neglected topic in entrepreneurship scholarship more broadly. Effective top managers can boost growth in new and early-stage ventures (Kulchina, 2017); however, little attention has been paid to this possibility outside the entrepreneurial finance literature, where scholars have explored how venture capitalists add value by installing seasoned managers in their portfolio companies (Sahlman, 1990; Hellmann and Puri, 2002; Hochberg, 2012). In view of the pressing time constraints that all entrepreneurs face, we believe that future research on this topic will be of general interest to entrepreneurship scholars, especially given continued scholarly interest in entrepreneurs' work effort (Parker et al., 2005; Vedula and Kim, 2018) and job satisfaction (Cueto and Pruneda, 2017; Warr, 2018; Reuschke, 2019; McDowell et al., 2019). One intriguing open research question is the extent to which hiring top managers accounts for higher average job satisfaction among entrepreneurs than among employees.

Naturally, our work is subject to several limitations. First, it relied on snowball sampling to obtain a sample of PEs. Although snowball sampling is useful for gathering data on hard-to-reach populations (Biernacki and Waldorf, 1981; Heckathorn, 1997), it is subject to several drawbacks. First, it can reduce sample sizes and yield samples that are not representative of the target population. Because recruitment utilizes network links, respondents who are well-

connected tend to be over-sampled and more isolated respondents under-sampled (Erickson, 1979). Thus, if more socially connected PEs differ significantly from more isolated ones and behave differently when hiring CEOs, our sample may produce biased estimates of the hypothesized relationships. For example, if socially connected individuals are more likely to be synergizers who hire CEOs with abundant industry experience, our SEM estimates might be biased upward.

Second, most entrepreneurs in our sample are based in large cities. 52% of them were located in Beijing, Shanghai, Guangzhou, and Shenzhen, four of the largest metropolitan cities in China. The under-representation of PEs in smaller cities and rural regions may limit the variation of PEs' hiring decisions in our sample. In smaller cities and rural areas, CEOs with high levels of specific human capital may be scarcer. Previous studies on PEs have also shown that in rural regions, owning and managing multiple businesses at the household level is more prevalent (Alsos, Carter and Ljunggren, 2014; Alsos, 2007). Furthermore, the institutional environment in rural China differs from that in urban areas, which could also affect entrepreneurs' strategic behaviors (Yu and Artz, 2019), including how they select managers to operate their new businesses. On the other hand, most of the entrepreneurial activities in China are known to be concentrated in metropolitan cities (Zhong, Li, Lu, Peng, Pan, Hao and Wang, 2017).

Third, we did not gather data and test whether factors such as legitimacy and reputation do indeed make high CEO SHC more valuable when synergies are present. Obtaining data on these mechanisms could enrich our understanding of how synergies influence PEs' decisions. Nor did we explore where synergies come from and whether PEs look for them when they are identifying new opportunities. Future research might investigate not only these matters but also

ones relating to whether PEs add brand new ventures or acquire them as strategic assets. This possibility relates to the ‘mode of entry’ question raised by Parker and van Praag (2012).

In addition to these limitations, the current study also analyzes individual PEs, not founding teams. That is despite evidence that founding teams are common among portfolio and serial entrepreneurs, compared to first-time entrepreneurs (Tihula and Huovinen, 2010). The current study lacks data on founding teams, which may be problematic if job satisfaction is affected by team dynamics, including within-team conflicts (De Jong, Song and Song, 2013; De Dreu and Weingart, 2003; Hoogendoorn et al., 2017; Saavedra, Earley, and Van Dyne, 1993). More generally, future research could explore broader sets of interactions between firm-level decisions, task-level factors, and individual-level characteristics. It could also collect panel data to investigate how PEs’ hiring strategies evolve as portfolios of businesses change and grow. Furthermore, future research could test whether synergies across businesses affect other critical decisions in the entrepreneurial process, such as business closures. For instance, qualitative evidence from family business studies suggests that an ‘identity fit’ between an underperforming business and the family that owns it makes a sale less likely, while the ability to redeploy assets of an underperforming business to other uses makes a closure more likely (Akhter, Sieger and Chirico, 2016). In a similar way, the presence of synergies might restrain a PE from closing an ostensibly underperforming business. It would be interesting to explore this possibility in future work as well.

Conclusion

To conclude, PEs are a small but economically significant segment of the entrepreneurial population who have been under-theorized and under-studied in prior entrepreneurship research. Our study has sought to shine a light on them, by: illuminating an important form of intra-group

heterogeneity in the form of business synergies; elucidating the central role of senior managerial hires; and suggesting that synergies might help account not only for the existence of portfolio entrepreneurship, but also outcomes like job satisfaction. Further research is urgently needed to deepen and widen our understanding of this important topic.

Chapter 7. Concluding Remarks

Contributions

Portfolio entrepreneurs (PEs) have been recognized as an important group of entrepreneurs who contribute significantly to wealth creation and economic development in various national contexts (Westhead et al., 2005b). Although prior research has recognized the importance of PEs, much attention has been given to making groupwise comparisons between PEs and single business owners, such as novice and serial entrepreneurs (Westhead et al., 2005a; Tihula and Huovinen 2010; Carbonara et al., 2019). The literature on PEs has treated them as a homogenous group, when in reality, there exists heterogeneity among PEs. In this dissertation, I explored the heterogeneity of PEs using a mixed methods approach. I started with a qualitative sample collected by conducting interviews with PEs in China and then built a quantitative sample of Chinese PEs by conducting an online survey questionnaire. Using these hand-collected data, I was able to distinguish PEs into two categories (Chapter 4), understand why individuals select into one category over the other (Chapter 5), and compare how these two categories of PEs differ in terms of hiring top managers, a decision that led to differences in PEs' job satisfaction (Chapter 6).

This dissertation makes the following contributions to the theory development surrounding PEs. One central contribution is that I identified synergy as an important but hitherto underexplored feature of portfolio entrepreneurship and made the distinction between synergistic and non-synergistic PEs. This novel distinction has the capacity to generate a number of insights for entrepreneurship literature. First, this distinction may clarify the question of who becomes a PE in the first place. Instead of closing or selling previous businesses, as serial entrepreneurs do,

retaining a business makes sense when taking the scope for realizing synergies across all businesses into consideration.

Evidence provided in this dissertation (more specifically, Chapter 4 and Chapter 5) highlights the importance of intra-temporal economies of scope⁶⁰ on entry decisions and adds to the stream of management literature that examines how inter-temporal economies of scope⁶¹ affect the dynamics of diversification (Helfat and Eisenhardt, 2004; Lieberman et al., 2017). The exploration of intra-temporal economies of scope in the entrepreneurship context complements Santamaria's (2021) arguments by suggesting that exit and entry decisions are likely to be shaped not only by how easily resources can be redeployed in the portfolio entrepreneur's other businesses but also by the level of supply-side and demand-side synergies that exist across businesses in the portfolio.

Second, this distinction may help explain different patterns of opportunity exploitation among PEs. The presence of synergies may direct the nature and existence of future opportunities that PEs identify. Findings presented here could contribute to the examination of how entrepreneurial experience affects opportunity identification (Westhead et al., 2009; Ucbasaran et al., 2003). Synergies may form a basis for discovering, as well as a motive for exploiting, new related opportunities. Compared to non-synergizers, synergizers are likely to narrow their search and focus on closely related or adjacent industries in order to leverage potential synergies arising from offering related or complementary products/services. On the other hand, non-synergizers may search more broadly for future opportunities and identify more opportunities through their social networks, similar to what Lechner and Leyronas (2009) have observed in their case studies.

⁶⁰ Refers to contemporaneous sharing of resources.

⁶¹ Redeploying resources and capabilities between related businesses over time (Helfat and Eisenhardt, 2004).

Third, this distinction may offer implications for financial performance and growth achieved by different types of PEs. It might be the case that synergizers operate larger portfolios than non-synergizers if exploitation of synergies leads to increased profitability at the portfolio level, which confers them the resources needed to hire skilled managers. Hiring productive managers then helps alleviate the pressure of limited time and attention on synergizers, enabling them to expand their portfolios further. These implications are important from a policy perspective. If synergizers are indeed the more productive type of PEs, policy makers can target them and offer tailored policies to facilitate higher growth and more significant contributions to the economy.

Limitations

The dissertation focused on individual PEs, rather than founding teams, which have been shown in prior works to be common in firms started and managed by habitual entrepreneurs (Tihula and Huovinen, 2010). In addition, my examination of PEs focused on PEs in urban settings, neglecting PEs who operate businesses in the rural areas of China. Prior works have shown that portfolio entrepreneurship is widespread in rural regions (Alsos, 2007; Alsos, Carter, Ljunggren and Welter, 2011) and not looking at rural PEs means that I have left out a major group of PEs who may exhibit significant differences in terms of reasons for becoming PEs, strategies used to manage multiple businesses, and entrepreneurial outcomes, such as job satisfaction, compared to PEs in urban areas.

A major limitation of this dissertation is its heavy reliance on snowball sampling. Due to its tendency to oversample socially connected individuals (Erickson, 1979), the resulting sample is likely to be unrepresentative of the true population of PEs. This could potentially bias the estimates of the hypothesized relationships if more socially connected PEs differ significantly

from more isolated ones. Take the relationship examined in Chapter 5 for example; if socially connected individuals tend to produce more complex products and tend to be synergizers, the estimates for H1 will be biased upwards. On the contrary, a downward bias is produced if socially connected individuals produce less complex products and self-select to become synergizers. For relationships examined in Chapter 6, the estimates are likely to be biased upwards if socially connected individuals are more likely to be synergizers who hire experienced top managers in their newly established businesses.

Another limitation stems from the cross-sectional nature of the quantitative sample used for Chapter 5 and Chapter 6. The lack of a longitudinal dimension limits my ability to make causal arguments because the possibility of reverse causality⁶² cannot be completely ruled out due to fact that the outcome variables and independent variables are measured concurrently. Using cross-sectional data also means that omitted variable bias⁶³ could be an issue because time-invariant unobserved characteristics are not controlled for, making it possible that an unobserved variable is driving the correlation between the dependent variables and independent variables. Yearly effects are also not controlled for and biased estimates are produced if 2019 was a special year for a particular category of PEs.

Future Directions

Because this dissertation does not outline any performance implications, the natural next step is to look at how synergizers and non-synergizers differ in terms of venture performance and portfolio performance. Performance implications are important to consider both theoretically and practically. Any performance differences that exist among the different types of PEs may help us

⁶² The direction of causation is the opposite as hypothesized. Rather than A causes B, the truth is that B causes A.

⁶³ Biases in estimated coefficients caused by leaving out relevant explanatory variables.

identify the most effective ways to organize multiple ventures and channel resources to the most efficient types of PEs to create maximum value for the economy.

This study focuses exclusively on PEs. In reality, PEs are heavily influenced by people around them and the surrounding context (Alsos et al., 2014). Future studies could look at how other stakeholders may think and behave differently when interacting with the two types of PEs. For instance, future studies could explore how employees may have different experiences when working for a synergistic PE as opposed to a non-synergistic PE. The construct of social comparison⁶⁴ is likely to be relevant because employees tend to compare their incomes with other employees of the firm. As shown by previous research, when employees observe others' higher rewards and deem their basis as unfair, they may respond with emotions of envy and injustice that trigger a range of behaviors potentially harmful to productivity (Obloj and Zenger, 2017; Rawley and Simcoe 2010). Investigating whether individuals are more likely to engage in social comparison when synergy is present in a PE's portfolio may generate implications for performance outcomes.

Compared to employees of non-synergizers, employees who work for synergizers may compare themselves more frequently to employees of other ventures owned and controlled by the same entrepreneur. This is because the ventures are likely to be related and mutually supportive in nature, making it likely that the teams from these ventures would collaborate and communicate more frequently. Social comparison may be of higher importance in this case because the boundary of the firm is blurry and the boundary of social comparison is now extended beyond each individual venture. For non-synergizers, however, the boundary of each

⁶⁴ Individuals' propensity to socially compare (Obloj and Zenger, 2017; Festinger 1954)

individual firm remains clear because the ventures are independent of each other, limiting the amount of social comparison among employees across ventures.

Future studies could also examine how venture capitalists' views on portfolio entrepreneurship might differ for synergizers and non-synergizers. Venture capitalists may view portfolio entrepreneurship as a negative entrepreneurial endeavor due to the concern about moral hazard problems. Moral hazard problems occur when entrepreneurs engage in "hidden action" and devote less effort to the venture through which they received funding from venture capitalists. For instance, the entrepreneur might devote a significant amount of time to firm B when firm A is funded by venture capitalists. The diverted attention and reduced effort exerted by the entrepreneur on firm A lowers the return of investment for venture capitalists. Thus, venture capitalists may view portfolio entrepreneurship in a negative light. However, the distinction between synergizers and non-synergizers may change the prediction above. Because synergizers create synergies across their ventures, these synergies may enhance the profitability of all involved ventures, increasing the expected payoff for venture capitalists. Future studies could investigate if these two types of PEs are considered differently when evaluated by venture capitalists, angel investors and other types of external investors.

If longitudinal datasets become available, one could also compare and contrast exit decisions made by synergizers and non-synergizers. As Lieberman et al. (2017) suggested, the presence of synergies increases the total expected profit and encourages entry decisions. By the same logic, synergies may also affect exit decisions because the effect on portfolio-level profits is likely to be greater for synergizers than for non-synergizers when one of the businesses is dropped. However, there is also a competing argument that with more options to redeploy

resources of the exiting firm (Santamaria, 2021), synergizers may find it easier to exit than non-synergizers.

More broadly, future studies could try to disentangle the effect of inter-temporal (synergy) and intra-temporal economies of scope (redeployment) on entrepreneurs' entry and exit decisions and explore which effect dominates the decisions. Furthermore, one could explore how these two effects interact with each other. Sakhartov and Folta (2014) proposed that synergy and resource redeployment are non-positively related when evaluating their effects on value creation because the full realization of one benefit means insufficient realization of the other benefit. Future research could explore the interrelationship between these two benefits, potentially using a sample of serial entrepreneurs and PEs. Serial entrepreneurs have been modeled as owning a diversified portfolio over time whereas PEs can be seen as owning a concurrent portfolio (Sarasvathy et al., 2011). Serial and portfolio entrepreneurship could provide a well-suited context for testing the relationship between inter-temporal (serial entrepreneurs) and intra-temporal (mainly intra-temporal, but maybe a combination of both) economies of scope.

References

- Acs, Z. (2006). How is entrepreneurship good for economic growth? *Innovations: Technology, governance, globalization*, 1(1), 97-107.
- Adner, R. (2006). Match your innovation strategy to your innovation ecosystem. *Harvard Business Review*, 84(4), 98.
- Agrawal, A., Cockburn, I., & Zhang, L. (2015). Deals not done: Sources of failure in the market for ideas. *Strategic Management Journal*, 36(7), 976-986.
- Ahuja G, Lampert G. C., & Novelli, E. (2013). The second face of appropriability: Generative appropriability and its determinants. *Academy of Management Review*, 38(2), 248–269.
- Akhter, N., Sieger, P., & Chirico, F. (2016). If we can't have it, then no one should: Shutting down versus selling in family business portfolios. *Strategic Entrepreneurship Journal*, 10(4), 371-394.
- Alsos, G. A., & Kolvereid, L. (1998). The business gestation process of novice, serial, and parallel business founders. *Entrepreneurship Theory and Practice*, 22(4), 101-114.
- Alsos, G. A., Ljunggren, E., & Pettersen, L. T. (2003). Farm-based entrepreneurs: what triggers the start-up of new business activities?. *Journal of Small Business and Enterprise Development*, 10(4), 435-443.
- Alsos, G. A., & Carter, S. (2006). Multiple business ownership in the Norwegian farm sector: Resource transfer and performance consequences. *Journal of Rural Studies*, 22(3), 313-322.
- Alsos, G. A. (2007). *Portfolio entrepreneurship: General and farm contexts*. Doctoral thesis, Bodø Graduate School of Business.
- Alsos, G. A., Carter, S., Ljunggren, E., & Welter, F. (2011). Introduction: Researching entrepreneurship in agriculture and rural development. *The Handbook of Research on Entrepreneurship in Agriculture and Rural Development*, 1-18.
- Alsos, G. A., Carter, S., & Ljunggren, E. (2014). Kinship and business: How entrepreneurial households facilitate business growth. *Entrepreneurship & Regional Development*, 26(1-2), 97-122.
- Alvarez, S. A., & Parker, S. C. (2009). Emerging firms and the allocation of control rights: A Bayesian approach. *Academy of Management Review*, 34(2), 209-227.
- Alvesson, M. (2003). Beyond neopositivists, romantics, and localists: A reflexive approach to interviews in organizational research. *Academy of Management Review*, 28(1), 13-33.

- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Andrews, F.M. & Withey, S.B. (1976). Social indicators of well-being: American's perceptions of life quality. New York: Plenum Press.
- Antoncic, B., & Hisrich, R. D. (2001). Intrapreneurship: Construct refinement and cross-cultural validation. *Journal of business venturing*, 16(5), 495-527.
- Ansoff, H. (1965). *Corporate strategy*. New York.
- Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18(1), 105-123.
- ArcelorMittal. (2009). Annual Report 2009: Management Report. Accessed October 19, 2017 from: <https://corporate.arcelormittal.com/~media/Files/A/ArcelorMittal/investors/annual-reports/2009/%20638-17-0-AnnualReport2009-ManagementReport.pdf>.
- Åstebro, T., & Bernhardt, I. (2005). The winner's curse of human capital. *Small Business Economics*, 24(1), 63-78.
- Baert, C., Meuleman, M., Debruyne, M., & Wright, M. (2016). Portfolio entrepreneurship and resource orchestration. *Strategic Entrepreneurship Journal*, 10(4), 346-370.
- Bailey, E. E., & Helfat, C. E. (2003). External management succession, human capital, and firm performance: An integrative analysis. *Managerial and Decision Economics*, 24(4), 347-369.
- Baker, T., & Aldrich, H. E. (1996). Prometheus stretches: Building identity and cumulative knowledge in multiemployer careers. *The boundaryless career: A new employment principle for a new organizational era*, 132-149.
- Bansal, P., Smith, W. K., & Vaara, E. (2018). New ways of seeing through qualitative research. *Academy of Management Journal*, 61(4), 1189-1195.
- Barclay, I., & Dann, Z. (2000). New-product-development performance evaluation: a product-complexity-based methodology. *IEE Proceedings-Science, Measurement and Technology*, 147(2), 41-55.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173.
- Battaglia, M. P., Izrael, D., Hoaglin, D. C., & Frankel, M. R. (2009). Practical considerations in raking survey data. *Survey Practice*, 2(5), 1-10.

- Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, 70(5, Part 2), 9-49.
- Becker, G.S. (1964). *Human Capital*. Columbia University Press, New York.
- Beckman, C. M. (2006). The influence of founding team company affiliations on firm behavior. *Academy of Management Journal*, 49(4), 741-758.
- Benz, M., & Frey, B. S. (2008). Being independent is a great thing: Subjective evaluations of self-employment and hierarchy. *Economica*, 75(298), 362-383.
- Betancourt, R., & Gautschi, D. (1990). Demand complementarities, household production, and retail assortments. *Marketing Science*, 9(2), 146-161.
- Bhushan, R. (1989). Firm characteristics and analyst following. *Journal of Accounting and Economics*, 11(2-3), 255-274.
- Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods & Research*, 10(2), 141-163.
- Bilgiç, R. (1998). The relationship between job satisfaction and personal characteristics of Turkish workers. *The Journal of Psychology*, 132(5), 549-557.
- Bimpikis, K., Elmaghraby, W. J., Moon, K., & Zhang, W. (2020). Managing Market Thickness in Online Business-to-Business Markets. *Management Science*, 66(12), 5783-5822.
- Birley, S., & Westhead, P. (1992). A comparison of new firms in “assisted” and “nonassisted” areas in Great Britain. *Entrepreneurship and Regional Development*, 4, 299-338
- Birley, S., & Westhead, P. (1993). A comparison of new businesses established by 'novice' and 'habitual' founders in Great Britain. *International Small Business Journal*, 12(1), 38-60.
- Bjørnskov, C., & Foss, N. J. (2020). Well-being and entrepreneurship: Using establishment size to identify treatment effects and transmission mechanisms. *Plos One*, 15(1), e0226008.
- Blanchflower, D. G., & Oswald, A. J. (1998). What makes an entrepreneur? *Journal of Labor Economics*, 16(1), 26-60.
- Boeker, W. (1997). Executive migration and strategic change: The effect of top manager movement on product-market entry. *Administrative Science Quarterly*, 42(2), 213-236.
- Bosma, N., Van Praag, M., Thurik, R., & De Wit, G. (2004). The value of human and social capital investments for the business performance of startups. *Small Business Economics*, 23(3), 227-236.

- Bradburn, N. M., Sudman, S., Blair, E., & Stocking, C. (1978). Question threat and response bias. *Public Opinion Quarterly*, 42(2), 221-234.
- Breugst, N., Domurath, A., Patzelt, H., & Klaukien, A. (2012). Perceptions of entrepreneurial passion and employees' commitment to entrepreneurial ventures. *Entrepreneurship Theory and Practice*, 36(1), 171-192.
- Brockhaus, R. H. (1987). Entrepreneurial folklore. *Journal of Small Business Management*, 25(3), 1.
- Browne, K. (2005). Snowball sampling: Using social networks to research non-heterosexual women. *International Journal of Social Research Methodology*, 8, 47-60.
- Bruder, J. & Schussler, R (1990). Organizational Mortality: The Liabilities of Newness and Adolescence. *Administrative Science Quarterly*, 35: 530-547.
- Bryden, J. M. Bell, C., Gilliatt, J., Hawkins, E. and MacKinnon, N. (1992). *Farm Household Adjustment in Western Europe 1987-1991* (Vols 1-2). The Arkleton Trust (Research), Nethy Bridge.
- Bryman, A. (1988). *Quantity and Quality in Social Research*. London: Unwin Hyman.
- Bryman, A., Bresnen, M., Beardsworth, A., & Keil, T. (1988). Qualitative research and the study of leadership. *Human Relations*, 41(1), 13-29.
- Button, K. S., Ioannidis, J. P., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S., & Munafò, M. R. (2013). Power failure: why small sample size undermines the reliability of neuroscience. *Nature Reviews Neuroscience*, 14(5), 365-376.
- Campbell, B. A., Coff, R., & Kryscynski, D. (2012). Rethinking sustained competitive advantage from human capital. *Academy of Management Review*, 37(3), 376-395.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56(2), 81.
- Capron, L., & Hulland, J. (1999). Redeployment of brands, sales forces, and general marketing management expertise following horizontal acquisitions: A resource-based view. *Journal of Marketing*, 63(2), 41-54.
- Carbonara, E., Santarelli, E., & Tran, H. T. (2019). De jure determinants of new firm formation: how the pillars of constitutions influence entrepreneurship. *Small Business Economics*, 47(1), 139-162.

- Carroll, G. R., & Swaminathan, A. (2000). Why the microbrewery movement? Organizational dynamics of resource partitioning in the US brewing industry. *American Journal of Sociology*, 106(3), 715-762.
- Carter, N. M., Gartner, W. B., & Reynolds, P. D. (1996). Exploring start-up event sequences. *Journal of Business Venturing*, 11(3), 151-166.
- Carter, S. (1998). Portfolio entrepreneurship in the farm sector: indigenous growth in rural areas?. *Entrepreneurship & Regional Development*, 10(1), 17-32.
- Carter, S. (1999). Multiple business ownership in the farm sector: assessing the enterprise and employment contributions of farmers in Cambridgeshire. *Journal of Rural Studies*, 15(4), 417-429.
- Carter, S., & Ram, M. (2003). Reassessing portfolio entrepreneurship. *Small Business Economics*, 21(4), 371-380.
- Carter, S., Tagg, S., & Dimitratos, P. (2004). Beyond portfolio entrepreneurship: multiple income sources in small firms. *Entrepreneurship & Regional Development*, 16(6), 481-499.
- Cassar, G. (2007). Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth. *Entrepreneurship and Regional Development*, 19(1), 89-107.
- Castanias, R. P., & Helfat, C. E. (2001). The managerial rents model: Theory and empirical analysis. *Journal of Management*, 27(6), 661-678.
- Chase, W. & Simon, H. (1973). Perception in chess. *Cognitive Psychology*, 4, 55-81.
- Chatterjee, S. (1986). Types of synergy and economic value: The impact of acquisitions on merging and rival firms. *Strategic Management Journal*, 7(2), 119-139.
- Chatterjee, S., & Wernerfelt, B. (1991). The link between resources and type of diversification: Theory and evidence. *Strategic Management Journal*, 12(1), 33-48.
- Chemmanur, T. J., & Paeglis, I. (2005). Management quality, certification, and initial public offerings. *Journal of Financial Economics*, 76(2), 331-368.
- Chen, L., Hu, J. Y., & Wang, S. Q. (2012). The role of antioxidants in photoprotection: a critical review. *Journal of the American Academy of Dermatology*, 67(5), 1013-1024.
- Chen, S., Sun, Z., Tang, S., & Wu, D. (2011). Government intervention and investment efficiency: Evidence from China. *Journal of Corporate Finance*, 17(2), 259-271.

- Cheng, F., van Oort, F., Geertman, S., & Hooimeijer, P. (2014). Science Parks and the Co-location of High-tech Small-and Medium-sized Firms in China's Shenzhen. *Urban Studies*, 51(5), 1073-1089.
- Chi, M.T.H. & Koeske, R. (1983). Network representation of a child's dinosaur knowledge. *Developmental Psychology*, 19, 29-39.
- Choo, F. & Trotman, K.T. (1991). The relationship between knowledge structure and judgments for experienced and inexperienced auditors. *The Accounting Review*, 66, 464-485.
- Chowdhury, S., Schulz, E., Milner, M., & Van De Voort, D. (2014). Core employee based human capital and revenue productivity in small firms: An empirical investigation. *Journal of Business Research*, 67(11), 2473-2479.
- Christensen, H. K., & Montgomery, C. A. (1981). Corporate economic performance: Diversification strategy versus market structure. *Strategic Management Journal*, 2(4), 327-343.
- Chu, H. M., Kara, O., Zhu, X., & Gok, K. (2011). Chinese entrepreneurs. *Journal of Chinese Entrepreneurship*, 3(2), 84-111.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Cole, M. S., Walter, F., & Bruch, H. (2008). Affective mechanisms linking dysfunctional behavior to performance in work teams: A moderated mediation study. *Journal of Applied Psychology*, 93(5), 945.
- Conti, R., Gambardella, A., & Novelli, E. (2019). Specializing in generality: Firm strategies when intermediate markets work. *Organization Science*, 30(1), 126-150.
- Conway, M., & Ross, M. (1984). Getting what you want by revising what you had. *Journal of Personality and Social Psychology*, 47(4), 738.
- Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9(5), 371-395.
- Copulsky, W. (1976). Cannibalism in the marketplace. *Journal of Marketing*, 40(4), 103-105.
- Cueto, B., & Pruneda, G. (2017). Job satisfaction of wage and self-employed workers. Do job preferences make a difference? *Applied Research in Quality of Life*, 12(1), 103-123.
- Cull, R., Li, W., Sun, B., & Xu, L. C. (2015). Government connections and financial constraints: Evidence from a large representative sample of Chinese firms. *Journal of Corporate Finance*, 32, 271-294.

- Cyert R. M. , March J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice Hall.
- Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal*, 34(3), 555-590.
- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301-331.
- Davis, P. S., Robinson Jr, R. B., Pearce, J. A., & Park, S. H. (1992). Business unit relatedness and performance: A look at the pulp and paper industry. *Strategic Management Journal*, 13(5), 349-361.
- Davis, R., & Thomas, L. G. (1993). Direct estimation of synergy: A new approach to the diversity-performance debate. *Management Science*, 39(11), 1334-1346.
- Dawson, C. (2017). Financial optimism and entrepreneurial satisfaction. *Strategic Entrepreneurship Journal*, 11(2), 171-194.
- Deci, E. L., & Ryan, R. M. (2000). The " what" and " why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227-268.
- De Dreu, C. K., & Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology*, 88(4), 741.
- De Jong, A., Song, M., & Song, L. Z. (2013). How lead founder personality affects new venture performance: The mediating role of team conflict. *Journal of Management*, 39(7), 1825-1854.
- Deeds, D. L., Mang, P. Y., & Frandsen, M. L. (2004). The influence of firms' and industries' legitimacy on the flow of capital into high-technology ventures. *Strategic Organization*, 2(1), 9-34.
- Delmar, F., & Davidsson, P. (2000). Where do they come from? Prevalence and characteristics of nascent entrepreneurs. *Entrepreneurship & Regional Development*, 12(1), 1-23.
- Demsetz, H. (1974). Toward a theory of property rights. In *Classic Papers in Natural Resource Economics* (pp. 163-177). Palgrave Macmillan, London.
- Denzin, N. K. (1982). Contributions of anthropology and sociology to qualitative research methods. *New Directions for Institutional Research*, 34, 17-26.
- Devers, C. E., Dewett, T., Mishina, Y., & Belsito, C. A. (2009). A general theory of organizational stigma. *Organization Science*, 20(1), 154-171.

Dewald, J. R., Hall, J., Chrisman, J. J., & Kellermanns, F. W. (2007). The governance paradox: Preferences of small vulnerable firms in the homebuilding industry. *Entrepreneurship Theory and Practice*, 31(2), 279-297.

Djurfeldt, G., & Waldenström, C. (1999). Mobility patterns of Swedish farming households. *Journal of Rural Studies*, 15(3), 331-344.

Donckels, R., Dupont, B., & Michel, P. (1987). Multiple Business Starters Who? Why? What?. *Journal of Small Business & Entrepreneurship*, 5(1), 48-63.

Dowell G. W. S., Shackell M. B., Stuart N. V. 2011. Boards, CEOs, and surviving a financial crisis: Evidence from the internet shakeout. *Strategic Management Journal*, 32(10), 1025–1045.

Dreschner, F. (2018, November 10). Why Shenzhen is a startup heaven — Three learnings from talks with founders. Retrieved from <https://medium.datadriveninvestor.com/why-shenzhen-is-a-startup-heaven-three-learnings-from-talks-with-founders-ce9adbfae13e>

Edlich, R., Winters, K. L., Lim, H. W., Cox, M. J., Becker, D. G., Horowitz, J. H., ... & Long III, W. B. (2004). Photoprotection by sunscreens with topical antioxidants and systemic antioxidants to reduce sun exposure. *Journal of Long-term Effects of Medical Implants*, 14(4), 317-340.

Eesley, C., & Wang, Y. (2017). Social influence in career choice: Evidence from a randomized field experiment on entrepreneurial mentorship. *Research Policy*, 46(3), 636-650.

Eisenhardt, K. M., & Schoonhoven, C. B. (1990). Organizational growth: Linking founding team, strategy, environment, and growth among US semiconductor ventures, 1978-1988. *Administrative Science Quarterly*, 35(3), 504-529.

Erickson, B. H. (1979). Some problems of inference from chain data. *Sociological Methodology*, 10, 276-302.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics*, 26(2), 301-325.

Farjoun, M. (1994). Beyond industry boundaries: Human expertise, diversification and resource-related industry groups. *Organization Science*, 5(2), 185-199.

Farjoun, M. (1998). The independent and joint effects of the skill and physical bases of relatedness in diversification. *Strategic Management Journal*, 19(7), 611-630.

Fauchart, E., & Cowan, R. (2014). Weak links and the management of reputational interdependencies. *Strategic Management Journal*, 35(4), 532-549.

Feldman, E. R., Gilson, S. C., & Villalonga, B. (2014). Do analysts add value when they most can? Evidence from corporate spin-offs. *Strategic Management Journal*, 35(10), 1446-1463.

- Fierro, A. C. M., Noble, D., Hatem, O., & Balunywa, W. (2018). African portfolio entrepreneurship and the creation of jobs. *Journal of Small Business and Enterprise Development*, 25(5), 730-751.
- Fiet, J. O. (2002). *The systematic search for entrepreneurial discoveries*. ABC-CLIO.
- Folta, T. B., Delmar, F., & Wennberg, K. (2010). Hybrid entrepreneurship. *Management Science*, 56(2), 253-269.
- Fombrun, C., & Shanley, M. (1990). What's in a name? Reputation building and corporate strategy. *Academy of Management Journal*, 33(2), 233-258.
- Fontana, Andrea and James Frey. 1994. The Art of Science. In N. a. Y. L. Denzin (Eds), *The Handbook of Qualitative Research* (pp. 361-76). Thousand Oaks: Sage Publications.
- Foss, N. J. (1997). On the rationales of corporate headquarters. *Industrial and Corporate Change*, 6(2), 313-338.
- Foss, N. J., & Klein, P. G. (2005). Entrepreneurship and the economic theory of the firm: any gains from trade?. In *Handbook of Entrepreneurship Research* (pp. 55-80). Springer, Boston, MA.
- Franke, N., Schreier, M., & Kaiser, U. (2010). The “I designed it myself” effect in mass customization. *Management Science*, 56(1), 125-140.
- Frederick, D.M. (1991). Auditors’ representation and retrieval of internal control knowledge. *The Accounting Review*, 66, 240–258.
- Frederick, D.M. & Libby, R. (1986). Expertise and auditors’ judgments of conjunctive events. *Journal of Accounting Research*, 24, 270–290.
- Freeman, J., Carroll, G. R., & Hannan, M. T. (1983). The liability of newness: Age dependence in organizational death rates. *American Sociological Review*, 48(5), 692-710.
- Fuchs, C., & Diamantopoulos, A. (2009). Using single-item measures for construct measurement in management research: Conceptual issues and application guidelines. *Die Betriebswirtschaft*, 69(2), 195-210.
- Gagné, R. M., & Glaser, R. (1987). Foundations in learning research. *Instructional technology: Foundations*, 49-83.
- Galunic, D. C., & Rodan, S. (1998). Resource recombinations in the firm: Knowledge structures and the potential for Schumpeterian innovation. *Strategic Management Journal*, 19(12), 1193-1201.

- Gartner, W. B. (1989). Some suggestions for research on entrepreneurial traits and characteristics. *Entrepreneurship Theory and Practice*, 14(1), 27-38.
- Gifford, S. (1998). Limited entrepreneurial attention and economic development. *Small Business Economics*, 10(1), 17-30.
- Gimeno, J., Folta, T. B., Cooper, A. C., & Woo, C. Y. (1997). Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly*, 42(4), 750-783.
- Glaser, B. & Strauss, A. (1967). *The Discovery of Grounded Theory*. Aldine Publishing Company, Hawthorne, NY.
- Gobbo, C. & Chi, M.T.H. (1986). How knowledge is structured and used by expert and novice children. *Cognitive Development*, 1, 221–237.
- Goodman, R. A., & Goodman, L. P. (1976). Some management issues in temporary systems: A study of professional development and manpower-the theater case. *Administrative Science Quarterly*, 21(3), 494-501.
- Gopalan, R., Nanda, V., & Seru, A. (2007). Affiliated firms and financial support: Evidence from Indian business groups. *Journal of Financial Economics*, 86(3), 759-795.
- Gordon, R. H., & Li, W. (2003). Government as a discriminating monopolist in the financial market: The case of China. *Journal of Public Economics*, 87(2), 283-312.
- Granovetter, M. (1995). Coase revisited: Business groups in the modern economy. *Industrial and Corporate Change*, 4(1), 93-130.
- Griffin, M. A., Patterson, M. G., & West, M. A. (2001). Job satisfaction and teamwork: The role of supervisor support. *Journal of Organizational Behavior*, 22(5), 537-550.
- Gruber, M., MacMillan, I. C., & Thompson, J. D. (2013a). Escaping the prior knowledge corridor: What shapes the number and variety of market opportunities identified before market entry of technology start-ups?. *Organization Science*, 24(1), 280-300.
- Gruber, M., Harhoff, D., & Hoisl, K. (2013b). Knowledge recombination across technological boundaries: Scientists vs. engineers. *Management Science*, 59(4), 837-851.
- Gubrium, J. F., & Holstein, J. A. (1997). *The New Language of Qualitative Method*. Oxford University Press on Demand.
- Gulati, R. (1998). Alliances and networks. *Strategic Management Journal*, 19(4), 293–317.
- Gulati, R., & Higgins, M. C. (2003). Which ties matter when? The contingent effects of interorganizational partnerships on IPO success. *Strategic Management Journal*, 24(2), 127-144.

Haack, P., Pfarrer, M. D., & Scherer, A. G. (2014). Legitimacy-as-feeling: How affect leads to vertical legitimacy spillovers in transnational governance. *Journal of Management Studies*, 51(4), 634-666.

Hagedoorn, J. (1996). Innovation and entrepreneurship: Schumpeter revisited. *Industrial and Corporate Change*, 5(3), 883-896.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate data analysis*. Prentice Hall: Upper Saddle River, NJ.

Hall, P. 1995. Habitual owners of small businesses. In F. Chittenden et al., eds., *Small firms: Partnerships for growth*. London: Paul Chapman Publishing.

Harding, S. (2005). Philosophy and standpoint theory. Negotiating with the Positivist Legacy: New Social Justice Movements and a Standpoint Politics of Method. In *The politics of method in the human sciences* (pp. 346-365). Duke University Press.

Harrison, J. S., Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (2001). Resource complementarity in business combinations: Extending the logic to organizational alliances. *Journal of Management*, 27(6), 679-690.

Haunschild, P. R. (1994). How much is that company worth? Interorganizational relationships, uncertainty, and acquisition premiums. *Administrative Science Quarterly*, 39(3), 391-411.

Hawkins, S. A., & Hastie, R. (1990). Hindsight: Biased judgments of past events after the outcomes are known. *Psychological Bulletin*, 107(3), 311.

Hawley, F. B. (1907). *Enterprise and the productive process: A theory of economic productivity presented from the point of view of the entrepreneur and based upon definitions, secured through deduction (and presumably, therefore, precise and final) of the scope and fundamental terms of the science of economics*. GP Putnam's Sons.

Haynes, P. J. (2003). Differences among entrepreneurs: "Are you experienced?" may be the wrong question. *International Journal of Entrepreneurial Behavior & Research*, 9(3), 111-128.

Hayes, A. F. (2013). *Methodology in the social sciences. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.

Hayes, A. F., Montoya, A. K., & Rockwood, N. J. (2017). The analysis of mechanisms and their contingencies: PROCESS versus structural equation modeling. *Australasian Marketing Journal (AMJ)*, 25(1), 76-81.

He, P. (2008). *An investigation of the antecedents and consequences of affective commitment in a US hospitality organization*. Doctoral dissertation, Virginia Tech.

- Hébert, R. F., & Link, A. N. (1989). In search of the meaning of entrepreneurship. *Small Business Economics*, 1(1), 39-49.
- Heckathorn, D. D. (1997). Respondent-driven sampling: a new approach to the study of hidden populations. *Social Problems*, 44(2), 174-199.
- Heide, J. B., & John, G. (1988). The role of dependence balancing in safeguarding transaction-specific assets in conventional channels. *Journal of Marketing*, 52(1), 20-35.
- Hellmann, T., & Puri, M. (2002). Venture capital and the professionalization of start-up firms: Empirical evidence. *The Journal of Finance*, 57(1), 169-197.
- Hill, C. W., Hitt, M. A., & Hoskisson, R. E. (1992). Cooperative versus competitive structures in related and unrelated diversified firms. *Organization Science*, 3(4), 501-521.
- Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (1994). A mid-range theory of the interactive effects of international and product diversification on innovation and performance. *Journal of Management*, 20(2), 297-326.
- Hochberg, Y. V. (2012). Venture capital and corporate governance in the newly public firm. *Review of Finance*, 16(2), 429-480.
- Holtz-Eakin, D. (1995). Should small businesses be tax-favored?. *National Tax Journal*, 48(3), 387-395.
- Honig, B. (2001). Learning strategies and resources for entrepreneurs and intrapreneurs. *Entrepreneurship Theory and Practice*, 26(1), 21-34.
- Hoogendoorn, S., Parker, S. C., & Van Praag, M. (2017). Smart or diverse start-up teams? Evidence from a field experiment. *Organization Science*, 28(6), 1010-1028.
- Iacobucci, D. (2008). *Mediation Analysis* (No. 156). Sage Publishers.
- Iacobucci, D. (2002). Explaining business groups started by habitual entrepreneurs in the Italian manufacturing sector. *Entrepreneurship & Regional Development*, 14(1), 31-47.
- Iacobucci, D., & Rosa, P. (2005). Growth, diversification, and business group formation in entrepreneurial firms. *Small Business Economics*, 25(1), 65-82.
- Iacobucci, D., & Rosa, P. (2010). The growth of business groups by habitual entrepreneurs: The role of entrepreneurial teams. *Entrepreneurship Theory and Practice*, 34(2), 351-377.
- Ibarra, H. (1999). Provisional selves: Experimenting with image and identity in professional adaptation. *Administrative Science Quarterly*, 44(4), 764-791.

- Ilinitch, A. Y., & Zeithaml, C. P. (1995). Operationalizing and testing Galbraith's center of gravity theory. *Strategic Management Journal*, 16(5), 401-410.
- Ireland, R. D., Covin, J. G., & Kuratko, D. F. (2009). Conceptualizing corporate entrepreneurship strategy. *Entrepreneurship Theory and Practice*, 33(1), 19-46.
- Isabella, L. A. (1990). Evolving interpretations as a change unfolds: How managers construe key organizational events. *Academy of Management Journal*, 33(1), 7-41.
- Ito, K., & Rose, E. L. (1994). The genealogical structure of Japanese firms: Parent-subsidiary relationships. *Strategic Management Journal*, 15(S2), 35-51.
- Jaskiewicz, P., Combs, J. G., Ketchen Jr, D. J., & Ireland, R. D. (2016). Enduring entrepreneurship: antecedents, triggering mechanisms, and outcomes. *Strategic Entrepreneurship Journal*, 10, 337-345.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Jiang, R. J., Tao, Q. T., & Santoro, M. D. (2010). Alliance portfolio diversity and firm performance. *Strategic Management Journal*, 31(10), 1136-1144.
- Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, 24(4), 602-611.
- Johanson, J., & Vahlne, J. E. (1977). The internationalization process of the firm—a model of knowledge development and increasing foreign market commitments. *Journal of International Business Studies*, 8(1), 23-32.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133.
- Jose, P.E. (2013) *Doing Statistical Mediation & Moderation*. Guilford, London.
- Judge, T. A., Piccolo, R. F., Podsakoff, N. P., Shaw, J. C., & Rich, B. L. (2010). The relationship between pay and job satisfaction: A meta-analysis of the literature. *Journal of Vocational Behavior*, 77(2), 157-167.
- Kadile, V., & Biraglia, A. (2020). From hobby to business: Exploring environmental antecedents of entrepreneurial alertness using fsQCA. *Journal of Small Business Management*, 1-36.
- Kaikkonen, V., 2005. *Essays on the entrepreneurial process in rural micro firms*. Doctoral Dissertation, University of Kuopio.

- Karaevli, A. (2007). Performance consequences of new CEO 'Outsidersness': Moderating effects of pre-and post-succession contexts. *Strategic Management Journal*, 28(7), 681-706.
- Katz, J. A., Aldrich, H. E., Welbourne, T. M., & Williams, P. M. (2000). Guest editor's comments special issue on human resource management and the SME: Toward a new synthesis. *Entrepreneurship Theory and Practice*, 25(1), 7-10.
- Kaufman, C. F., Lane, P. M., & Lindquist, J. D. (1991). Exploring more than 24 hours a day: A preliminary investigation of polychronic time use. *Journal of Consumer Research*, 18(3), 392-401.
- Kelley, D. J., Peters, L., & O'Connor, G. C. (2009). Intra-organizational networking for innovation-based corporate entrepreneurship. *Journal of Business Venturing*, 24(3), 221-235.
- Kim, J. D. (2018). Is there a startup wage premium? Evidence from MIT graduates. *Research Policy*, 47(3), 637-649.
- Kim, S. K., Arthurs, J. D., Sahaym, A., & Cullen, J. B. (2013). Search behavior of the diversified firm: The impact of fit on innovation. *Strategic Management Journal*, 34(8), 999-1009.
- Kim, C., & Bettis, R. A. (2014). Cash is surprisingly valuable as a strategic asset. *Strategic Management Journal*, 35(13), 2053-2063.
- Kim, J. Y., & Miner, A. S. (2007). Vicarious learning from the failures and near-failures of others: Evidence from the US commercial banking industry. *Academy of Management Journal*, 50(3), 687-714.
- Kirzner, I. M. (1973). *Competition and entrepreneurship*. University of Chicago Press.
- Kirzner, I. M. (1997). Entrepreneurial discovery and the competitive market process: An Austrian approach. *Journal of Economic Literature*, 35(1), 60-85.
- Kirzner, I. M. (1999). Creativity and/or alertness: A reconsideration of the Schumpeterian entrepreneur. *The Review of Austrian Economics*, 11(1-2), 5-17.
- Kirzner, I. M. (2009). The alert and creative entrepreneur: A clarification. *Small Business Economics*, 32(2), 145-152.
- Klepper, S., & Sleeper, S. (2005). Entry by spinoffs. *Management Science*, 51(8), 1291-1306.
- Klepper, S., & Thompson, P. (2010). Disagreements and intra-industry spinoffs. *International Journal of Industrial Organization*, 28(5), 526-538.
- Knight, F. H. (1921). *Risk, uncertainty and profit*. New York: Hart, Schaffner and Marx.

- Kolenikov, S. (2016). Post-stratification or non-response adjustment. *Survey Practice*, 9(3), 112.
- Kolvereid, L., Bullvag, E., 1992. Novices versus experienced business founders: an exploratory investigation. In: Birley, S., MacMillan, I., Subramony, S. (Eds.), *Entrepreneurship research: Global perspectives*. North-Holland, London, pp. 275–285.
- Kor, Y. Y., & Leblebici, H. (2005). How do interdependencies among human-capital deployment, development, and diversification strategies affect firms' financial performance?. *Strategic Management Journal*, 26(10), 967-985.
- Kor, Y. Y., & Mahoney, J. T. (2004). Edith Penrose's (1959) contributions to the resource-based view of strategic management. *Journal of Management Studies*, 41(1), 183-191.
- Kulchina, E. (2017). Do foreign entrepreneurs benefit their firms as managers? *Strategic Management Journal*, 38(8), 1588-1607.
- Kwon, I., & Sohn, K. (2017). Job dissatisfaction of the self-employed in Indonesia. *Small Business Economics*, 49(1), 233-249.
- Lafuente, A., & Salas, V. (1989). Types of entrepreneurs and firms: The case of new Spanish firms. *Strategic Management Journal*, 10(1), 17-30.
- Lagakos, S. W. (1979). General right censoring and its impact on the analysis of survival data. *Biometrics*, 139-156.
- Lange, T. (2012). Job satisfaction and self-employment: autonomy or personality?. *Small Business Economics*, 38(2), 165-177.
- Larsson, R., & Finkelstein, S. (1999). Integrating strategic, organizational, and human resource perspectives on mergers and acquisitions: A case survey of synergy realization. *Organization Science*, 10(1), 1-26.
- Lavie, D., & Miller, S. R. (2008). Alliance portfolio internationalization and firm performance. *Organization Science*, 19(4), 623-646.
- Lechler, T. (2001). Social interaction: A determinant of entrepreneurial team venture success. *Small Business Economics*, 16(4), 263-278.
- Lerner, M., & Almor, T. (2002). Relationships among strategic capabilities and the performance of women-owned small ventures. *Journal of Small Business Management*, 40(2), 109-125.
- Leung, A., Der Foo, M., & Chaturvedi, S. (2013). Imprinting effects of founding core teams on HR values in new ventures. *Entrepreneurship Theory and Practice*, 37(1), 87-106.
- Levy, H., & Sarnat, M. (1970). International diversification of investment portfolios. *The American Economic Review*, 60(4), 668-675.

- Lechner, C., & Leyronas, C. (2009). Small–business group formation as an entrepreneurial development model. *Entrepreneurship Theory and Practice*, 33(3), 645-667.
- Lechner, C., Kirschenhofer, F., & Dowling, M. (2016). The influence of social capital on opportunity emergence and exploitation: A comparison of portfolio and serial entrepreneurs. *Journal of Innovation and Entrepreneurship*, 5(1), 1-23.
- Li, J., & Netessine, S. (2020). Higher market thickness reduces matching rate in online platforms: Evidence from a quasiexperiment. *Management Science*, 66(1), 271-289.
- Li, S. X., & Greenwood, R. (2004). The effect of within-industry diversification on firm performance: Synergy creation, multi-market contact and market structuration. *Strategic Management Journal*, 25(12), 1131-1153.
- Lieberman, M. B., Lee, G. K., & Folta, T. B. (2017). Entry, exit, and the potential for resource redeployment. *Strategic Management Journal*, 38(3), 526-544.
- Ling, Y. A. N., Simsek, Z., Lubatkin, M. H., & Veiga, J. F. (2008). Transformational leadership's role in promoting corporate entrepreneurship: Examining the CEO-TMT interface. *Academy of Management Journal*, 51(3), 557-576
- Locke, E. A. (1976). The nature and causes of job satisfaction. *Handbook of Industrial and Organizational Psychology*. Chicago: RandMcNally, 2(5), 360-580.
- Locke, K. D. (2001). *Grounded theory in management research*. Sage.
- Lucas Jr, R. E. (1978). On the size distribution of business firms. *The Bell Journal of Economics*, 508-523.
- Lundin, R. A., & Söderholm, A. (1995). A theory of the temporary organization. *Scandinavian Journal of Management*, 11(4), 437-455.
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135-172.
- MacMillan, I.C. (1986). To really learn about entrepreneurship, let's study habitual entrepreneurs. *Journal of Business Venturing*, 1(3), 241– 243.
- MacMillan, I. C., & Katz, J. A. (1992). Idiosyncratic milieus of entrepreneurial research: The need for comprehensive theories. *Journal of Business Venturing*, 7(1), 1-8.
- Majumdar, S. K., & Ramaswamy, V. (1994). Explaining downstream integration. *Managerial and Decision Economics*, 15(2), 119-129.

- Malfense Fierro, A. (2013). *Portfolio entrepreneurs in malawi: The role of risk and the environment in the process of portfolio creation and growth*. Doctoral dissertation, The University of Edinburgh.
- Manimala, M. J. (1992). Innovative entrepreneurship: Testing the theory of environmental determinism. *Entrepreneurship Theory at the Crossroads: Paradigms and Praxis*, 21-40.
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.
- Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77-91.
- Martin, P. Y., & Turner, B. A. (1986). Grounded theory and organizational research. *The Journal of Applied Behavioral Science*, 22(2), 141-157.
- Mason, C. H., & Milne, G. R. (1994). An approach for identifying cannibalization within product line extensions and multi-brand strategies. *Journal of Business Research*, 31(2-3), 163-170.
- Maxcy, S. J. (2003). Pragmatic threads in mixed methods research in the social sciences: The search for multiple modes of inquiry and the end of the philosophy of formalism. *Handbook of mixed methods in social and behavioral research*, 51-89.
- McDowell, W. C., Matthews, L. M., Matthews, R. L., Aaron, J. R., Edmondson, D. R., & Ward, C. B. (2019). The price of success: Balancing the effects of entrepreneurial commitment, work-family conflict and emotional exhaustion on job satisfaction. *International Entrepreneurship and Management Journal*, 15(4), 1179-1192.
- Mehmetoglu, M. (2018). Medsem: A Stata package for statistical mediation analysis. *International Journal of Computational Economics and Econometrics*, 8(1), 63-78.
- Meijer, E., Oczkowski, E., & Wansbeek, T. (2020). How measurement error affects inference in linear regression. *Empirical Economics*, 60, 131–155.
- Metin, U. B., Taris, T. W., Peeters, M. C., van Beek, I., & Van den Bosch, R. (2016). Authenticity at work—a job-demands resources perspective. *Journal of Managerial Psychology*, 31(2), 483-499.
- Meuleman, M., & De Maeseneire, W. (2012). Do R&D subsidies affect SMEs' access to external financing?. *Research Policy*, 41(3), 580-591.
- Meyer, G. D., & Heppard, K. A. (2000). Entrepreneurial Strategies. *Entrepreneurship as strategy: Competing on the entrepreneurial edge*.
- Meyer, A. D., Tsui, A. S., & Hinings, C. R. (1993). Configurational approaches to organizational analysis. *Academy of Management Journal*, 36(6), 1175-1195.

- McGaughey, S. L. (2007). Hidden ties in international new venturing: The case of portfolio entrepreneurship. *Journal of World Business*, 42(3), 307-321.
- McGrath, R. G. (1999). Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management Review*, 24(1), 13-30.
- McGrath, R. G. (2001). Exploratory learning, innovative capacity, and managerial oversight. *Academy of Management Journal*, 44(1), 118-131.
- McGrath, H., O'Toole, T., & Canning, L. (2019). Coopetition: a fundamental feature of entrepreneurial firms' collaborative dynamics. *Journal of Business & Industrial Marketing*, 34(7), 1555-1569.
- Millán, J. M., Hessels, J., Thurik, R., & Aguado, R. (2013). Determinants of job satisfaction: A European comparison of self-employed and paid employees. *Small Business Economics*, 40(3), 651-670.
- Miller, D. (2011). Miller (1983) revisited: A reflection on EO research and some suggestions for the future. *Entrepreneurship Theory and Practice*, 35(5), 873-894.
- Miller, D., & Friesen, P. H. (1984). A longitudinal study of the corporate life cycle. *Management science*, 30(10), 1161-1183.
- Miller, D. J. (2004). Firms' technological resources and the performance effects of diversification: a longitudinal study. *Strategic Management Journal*, 25(11), 1097-1119.
- Miller, D. J. (2006). Technological diversity, related diversification, and firm performance. *Strategic Management Journal*, 27(7), 601-619.
- Molina-Azorin, J. F. (2012). Mixed methods research in strategic management: Impact and applications. *Organizational Research Methods*, 15(1), 33-56.
- Montgomery, C. A. (1982). The measurement of firm diversification: Some new empirical evidence. *Academy of Management Journal*, 25(2), 299-307.
- Montgomery, C. A., & Singh, H. (1984). Diversification strategy and systematic risk. *Strategic Management Journal*, 5(2), 181-191.
- Montgomery, C. A., & Wernerfelt, B. (1988). Diversification, Ricardian rents, and Tobin's q. *The Rand Journal of Economics*, 623-632.
- Montgomery, C. A. (1994). Corporate diversification. *Journal of Economic Perspectives*, 8(3), 163-178.

- Moser, K. J., Tumasjan, A., & Welpel, I. M. (2017). Small but attractive: Dimensions of new venture employer attractiveness and the moderating role of applicants' entrepreneurial behaviors. *Journal of Business Venturing*, 32(5), 588-610.
- Mulholland, K. (1997). The family enterprise and business strategies. *Work, Employment and Society*, 11(4), 685-711.
- Muthén, B. O. (2002). Beyond SEM: General latent variable modeling. *Behaviormetrika*, 29(1), 81-117.
- Nayyar PR. (1992). On the measurement of corporate diversification strategy: Evidence from large U.S. service firms. *Strategic Management Journal*, 13(3), 219–235.
- Neal, D. (1995). Industry-specific human capital: Evidence from displaced workers. *Journal of Labor Economics*, 13(4), 653-677.
- Nickerson, J. A., & Zenger, T. R. (2002). Being efficiently fickle: A dynamic theory of organizational choice. *Organization Science*, 13(5), 547-566.
- Nikolaev, B., Shir, N., & Wiklund, J. (2020). Dispositional positive and negative affect and self-employment transitions: The mediating role of job satisfaction. *Entrepreneurship Theory and Practice*, 44(3), 451-474.
- Nunnally, J.C. (1967). *Psychometric theory*. New York: McGraw-Hill.
- Obloj, T., & Zenger, T. (2017). Organization design, proximity, and productivity responses to upward social comparison. *Organization Science*, 28(1), 1-18.
- Oldham, G. R., Hackman, J. R., & Pearce, J. L. (1976). Conditions under which employees respond positively to enriched work. *Journal of Applied Psychology*, 61(4), 395.
- Oo, P. P., Allison, T. H., Sahaym, A., & Juasrikul, S. (2019). User entrepreneurs' multiple identities and crowdfunding performance: Effects through product innovativeness, perceived passion, and need similarity. *Journal of Business Venturing*, 34(5), 105895.
- Orton, J. D., & Weick, K. E. (1990). Loosely coupled systems: A reconceptualization. *Academy of Management Review*, 15(2), 203-223.
- Ostroff, C., & Rothausen, T. J. (1997). The moderating effect of tenure in person—environment fit: a field study in educational organizations. *Journal of Occupational and Organizational Psychology*, 70(2), 173-188.
- Palepu, K. (1985). Diversification strategy, profit performance and the entropy measure. *Strategic Management Journal*, 6(3), 239-255.

- Parhankangas, A., & Arenius, P. (2003). From a corporate venture to an independent company: a base for a taxonomy for corporate spin-off firms. *Research Policy*, 32(3), 463-481.
- Parker, S. C., Belghitar, Y., & Barmby, T. (2005). Wage uncertainty and self-employed labour supply. *Economic Journal*, 115, C190-207.
- Parker, S. C., & Van Praag, C. M. (2012). The entrepreneur's mode of entry: Business takeover or new venture start?. *Journal of Business Venturing*, 27(1), 31-46.
- Parker, S. C. (2014). Who become serial and portfolio entrepreneurs?. *Small Business Economics*, 43(4), 887-898.
- Parker, S. C. (2018). *The economics of entrepreneurship*. Cambridge University Press.
- Parkhe, A. (1993). Strategic alliance structuring: A game theoretic and transaction cost examination of interfirm cooperation. *Academy of Management Journal*, 36(4), 794-829.
- Pasanen, M. (2003). Multiple entrepreneurship among successful SMEs in peripheral locations. *Journal of Small Business and Enterprise Development*, 10(4), 418-425.
- Patzelt, H., & Shepherd, D. A. (2011). Recognizing opportunities for sustainable development. *Entrepreneurship Theory and Practice*, 35(4), 631-652.
- Penrose, E. (1959). *The theory of the firm*. NY: John Wiley & Sons.
- Peter, J. P. (1981). Construct validity: A review of basic issues and marketing practices. *Journal of Marketing Research*, 18(2), 133-145.
- Pimmler, T. U., & Eppinger, S. D. (1994). *Integration analysis of product decompositions*. ASME Design Theory and Methodology Conference, September 1994, Minneapolis, MN.
- Plummer, L. A., Allison, T. H., & Connelly, B. L. (2016). Better together? Signaling interactions in new venture pursuit of initial external capital. *Academy of Management Journal*, 59(5), 1585-1604.
- Podolny, J. M. (1994). Market uncertainty and the social character of economic exchange. *Administrative Science Quarterly*, 39(3), 458-483.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4), 531-544.
- Politis, D. (2005). The process of entrepreneurial learning: A conceptual framework. *Entrepreneurship Theory and Practice*, 29(4), 399-424.

- Politis, D. (2008). Does prior start-up experience matter for entrepreneurs' learning? A comparison between novice and habitual entrepreneurs. *Journal of small business and Enterprise Development*, 15(3), 472-489.
- Prahalad, C. K., & Bettis, R. A. (1986). The dominant logic: A new linkage between diversity and performance. *Strategic Management Journal*, 7(6), 485-501.
- Pratt, M. G., Kaplan, S., & Whittington, R. (2020). Editorial essay: The tumult over transparency: Decoupling transparency from replication in establishing trustworthy qualitative research. *Administrative Science Quarterly*, 65(1), 1-19.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717-731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891.
- Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: quantitative strategies for communicating indirect effects. *Psychological Methods*, 16(2), 93.
- Priem, R. L., Li, S., & Carr, J. C. (2012). Insights and new directions from demand-side approaches to technology innovation, entrepreneurship, and strategic management research. *Journal of Management*, 38(1), 346-374.
- Raffiee, J., & Feng, J. (2014). Should I quit my day job?: A hybrid path to entrepreneurship. *Academy of Management Journal*, 57(4), 936-963.
- Ram, M. (1994). *Managing To Survive: Working Lives in Small Firms*, Oxford: Blackwell.
- Rauch, A., Frese, M., & Utsch, A. (2005). Effects of human capital and long-term human resources development and utilization on employment growth of small-scale businesses: a causal analysis. *Entrepreneurship Theory and Practice*, 29(6), 681-698.
- Rautiainen, M. (2012). *Dynamic ownership in family business system—A portfolio business approach*.
- Rawley, E., & Simcoe, T. S. (2010). Diversification, diseconomies of scope, and vertical contracting: Evidence from the taxicab industry. *Management Science*, 56(9), 1534-1550.
- Ren, C. R., & Guo, C. (2011). Middle managers' strategic role in the corporate entrepreneurial process: Attention-based effects. *Journal of Management*, 37(6), 1586-1610.
- Reuschke, D. (2019). The subjective well-being of homeworkers across life domains. *Environment and Planning A*, 51(6), 1326-1349.

- Rindova, V. P., Williamson, I. O., Petkova, A. P., & Sever, J. M. (2005). Being good or being known: An empirical examination of the dimensions, antecedents, and consequences of organizational reputation. *Academy of Management Journal*, 48(6), 1033-1049.
- Roach, M., & Sauermann, H. (2015). Founder or joiner? The role of preferences and context in shaping different entrepreneurial interests. *Management Science*, 61(9), 2160-2184.
- Roberts, P. W., & McEvily, S. (2005). Product-line expansion and resource cannibalization. *Journal of Economic Behavior & Organization*, 57(1), 49-70.
- Robin, J., & Wiersema, M. F. (1995). A resource-based approach to the multibusiness firm: Empirical analysis of portfolio interrelationships and corporate financial performance. *Management Journal*, 16, 277-299.
- Robinson, P. B., Stimpson, D. V., Huefner, J. C., & Hunt, H. K. (1991). An attitude approach to the prediction of entrepreneurship. *Entrepreneurship Theory and Practice*, 15(4), 13-32.
- Robinson, P. B., & Sexton, E. A. (1994). The effect of education and experience on self-employment success. *Journal of Business Venturing*, 9(2), 141-156.
- Robson, P. J., Akuetteh, C. K., Westhead, P., & Wright, M. (2012). Exporting intensity, human capital and business ownership experience. *International Small Business Journal*, 30(4), 367-387.
- Ronstadt, R. (1988). The corridor principle. *Journal of Business Venturing*, 3(1), 31-40.
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of business Venturing*, 26(4), 441-457.
- Rynes, S., & Gephart Jr, R. P. (2004). From the Editors: Qualitative Research and the "Academy of Management Journal". *The Academy of Management Journal*, 47(4), 454-462.
- Ram, M., Sanghera, B., Abbas, T., & Barlow, G. (1998). *Facilitating "break-out": Ethnic minority business development in an inner city context*. In unpublished paper presented to the Ethnic Minority Entrepreneurship Seminar, University of Central England Business School: Enterprise Research Centre.
- Rank, M. R. (1992). The blending of qualitative and quantitative methods in understanding childbearing among welfare recipients. *Qualitative Methods in Family Research*, 281-300.
- Robson, P. J., Akuetteh, C. K., Westhead, P., & Wright, M. (2012). Innovative opportunity pursuit, human capital and business ownership experience in an emerging region: Evidence from Ghana. *Small Business Economics*, 39(3), 603-625.

- Ronstadt, R. (1988). The corridor principle. *Journal of Business Venturing*, 3(1), 31-40.
- Rosa, P. (1998). Entrepreneurial processes of business cluster formation and growth by 'habitual' entrepreneurs. *Entrepreneurship Theory and Practice*, 22(4), 43-61.
- Rosa, P., & Scott, M. (1999). Entrepreneurial diversification, business-cluster formation, and growth. *Environment and Planning C: Government and Policy*, 17(5), 527-547.
- Rosa, P. (2009). Book Review: Deniz Ucbasaran, Gry Agnete Alsos, Paul Westhead and Mike Wright, 'Habitual Entrepreneurs', *Foundations and Trends® in Entrepreneurship* 4(4): 309—450. Boston, MA: NOW Publishers, 2008. 156pp. ISBN 978—1—60198—112—7, £75 (pbk). *International Small Business Journal*, 27(2), 246–248.
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441-457.
- Roy, A., Walters, P. G., & Luk, S. T. (2001). Chinese puzzles and paradoxes: Conducting business research in China. *Journal of Business Research*, 52(2), 203-210.
- Rumelt, R. P. (1974). *Strategy, structure, and economic performance*. Harvard University Press, Cambridge, MA.
- Rumelt, R. P. (1982). Diversification strategy and profitability. *Strategic Management Journal*, 3(4), 359-369.
- Rumelt, R. P. (1984). Towards a strategic theory of the firm. *Competitive Strategic Management*, 26(3), 556-570.
- Saavedra, R., Earley, P. C., & Van Dyne, L. (1993). Complex interdependence in task-performing groups. *Journal of Applied Psychology*, 78(1), 61-72.
- Sadler, G. R., Lee, H. C., Lim, R. S. H., & Fullerton, J. (2010). Recruitment of hard-to-reach population subgroups via adaptations of the snowball sampling strategy. *Nursing & Health Sciences*, 12(3), 369-374.
- Sahlman, W. A. (1990). The structure and governance of venture-capital organizations. *Journal of Financial Economics*, 27(2), 473-521.
- Sakhartov, A. V., & Folta, T. B. (2014). Resource relatedness, redeployability, and firm value. *Strategic Management Journal*, 35(12), 1781-1797.
- Santamaria, S. (2021). Portfolio entrepreneurs' behavior and performance: A resource redeployment perspective. *Management Science*, Advanced online publication. <https://doi.org/10.1287/mnsc.2020.3929>

Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2), 243-263.

Sarasvathy, S. D., Menon, A. R., & Kuechle, G. (2013). Failing firms and successful entrepreneurs: Serial entrepreneurship as a temporal portfolio. *Small Business Economics*, 40(2), 417-434.

Schumpeter, J. A. (1934). *The schumptr: Theory economic development*. Harvard University Press.

Scott, W. R. (1995). *Institutions and Organizations*. Sage Publications, Inc.

Scott, M., & Rosa, P. (1996). Has firm level analysis reached its limits? Time for a rethink. *International Small Business Journal*, 14(4), 81-89.

Seth, A. (1990). Sources of value creation in acquisitions: an empirical investigation. *Strategic Management Journal*, 11(6), 431-446.

Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4), 448-469.

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217-226.

Shaw, K., & Sørensen, A. (2019). The productivity advantage of serial entrepreneurs. *ILR Review*, 72(5), 1225-1261.

Shepherd, D. A., & DeTienne, D. R. (2005). Prior knowledge, potential financial reward, and opportunity identification. *Entrepreneurship Theory and Practice*, 29(1), 91-112.

Shore, L. M., Cleveland, J. N., & Goldberg, C. B. (2003). Work attitudes and decisions as a function of manager age and employee age. *Journal of Applied Psychology*, 88(3), 529-37.

Silverman, B. S. (1999). Technological resources and the direction of corporate diversification: Toward an integration of the resource-based view and transaction cost economics. *Management Science*, 45(8), 1109-1124.

Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, 32(1), 273-292.

Smallbone, D., & Welter, F. (2001). The distinctiveness of entrepreneurship in transition economies. *Small Business Economics*, 16(4), 249-262.

Smith, N. R. (1967). *The entrepreneur and his firm: The relationship between type of man and type of company*.

- Smith, N. R., & Miner, J. B. (1983). Type of entrepreneur, type of firm, and managerial motivation: Implications for organizational life cycle theory. *Strategic Management Journal*, 4(4), 325-340.
- Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations*, 39(11), 1005-1016.
- Starr, J. A., & Bygrave, W. D. (1991). *The assets and liabilities of prior start-up experience: An exploratory study of multiple venture entrepreneurs*. Wharton School of the University of Pennsylvania, Snider Entrepreneurial Center.
- St. John, C. H., & Harrison, J. S. (1999). Manufacturing-based relatedness, synergy, and coordination. *Strategic Management Journal*, 20(2), 129-145.
- Stinchcombe, A. L. (1965). Organizations and social structure. *Handbook of Organizations*, 44(2), 142-193.
- Strauss, A., & Corbin, J. (1994). Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 273–285). Sage Publications, Inc.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research techniques*. Thousand Oaks, CA: Sage publications.
- Su, Y., Zahra, S. A., Li, R., & Fan, D. (2019). Trust, poverty, and subjective wellbeing among Chinese entrepreneurs. *Entrepreneurship & Regional Development*, 32(1-2), 221-245.
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3), 571-610.
- Sullivan, S. E., Forret, M. L., Mainiero, L. A., & Terjesen, S. (2007). What motivates entrepreneurs? An exploratory study of the kaleidoscope career model and entrepreneurship. *Journal of Applied Management and Entrepreneurship*, 12(4), 4-19.
- Syam, N. B., Ruan, R., & Hess, J. D. (2005). Customized products: A competitive analysis. *Marketing Science*, 24(4), 569-584.
- Tanriverdi, H. (2005). Information technology relatedness, knowledge management capability, and performance of multibusiness firms. *MIS Quarterly*, 311-334.
- Tanriverdi, H., & Venkatraman, N. (2005). Knowledge relatedness and the performance of multibusiness firms. *Strategic Management Journal*, 26(2), 97-119.

- Tashakkori, A., & Teddlie, C. (2003). Issues and dilemmas in teaching research methods courses in social and behavioural sciences: US perspective. *International Journal of Social Research Methodology*, 6(1), 61-77.
- Taylor, M. (1999). The small firm as a temporary coalition. *Entrepreneurship & Regional Development*, 11(1), 1-19.
- Teece, D. J. (1980). Economies of scope and the scope of the enterprise. *Journal of Economic Behavior & Organization*, 1(3), 223-247.
- Teece, D. J. (1982). Towards an economic theory of the multiproduct firm. *Journal of Economic Behavior & Organization*, 3(1), 39-63.
- Thorgren, S., & Wincent, J. (2015). Passion and habitual entrepreneurship. *International Small Business Journal*, 33(2), 216-227.
- Tihula, S., & Huovinen, J. (2010). Incidence of teams in the firms owned by serial, portfolio and first-time entrepreneurs. *International Entrepreneurship and Management Journal*, 6(3), 249-260.
- Tiryakian, E. A. (1968). Typologies. *International Encyclopedia of the Social Sciences*, 16, 177-186.
- Todres, L., & Galvin, K. (2005). Pursuing both breadth and depth in qualitative research: illustrated by a study of the experience of intimate caring for a loved one with Alzheimer's disease. *International Journal of Qualitative Methods*, 4(2), 20-31.
- Tsang, M. C., Rumberger, R. W., & Levin, H. M. (1991). The impact of surplus schooling on worker productivity. *Industrial Relations: A Journal of Economy and Society*, 30(2), 209-228.
- Turner JC, Hogg MA, Oakes PJ, Reicher SD, Wetherell MS. (1987). *Rediscovering the Social Group: A Self-Categorization Theory*. Basil Blackwell: Oxford, U.K.
- Ucbasaran, D., Westhead, P., & Wright, M. (2001). The focus of entrepreneurial research: contextual and process issues. *Entrepreneurship Theory and Practice*, 25(4), 57-80.
- Ucbasaran, D., Westhead, P., Wright, M., & Binks, M. (2003). Does entrepreneurial experience influence opportunity identification?. *The Journal of Private Equity*, 7(1), 7-14.
- Ucbasaran, D., Westhead, P., & Wright, M. (2006). *Habitual entrepreneurs*. Edward Elgar Publishing.
- Ucbasaran, D., Alsos, G. A., Westhead, P., & Wright, M. (2008). Habitual entrepreneurs. *Foundations and Trends® in Entrepreneurship*, 4(4), 309-450.

- Ucbasaran, D., Westhead, P., & Wright, M. (2009). The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of Business Venturing*, 24(2), 99-115.
- Ucbasaran, D., Westhead, P., Wright, M., & Flores, M. (2010). The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, 25(6), 541-555.
- Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26(3), 341-358.
- Van Maanen, J. (1979). Reclaiming qualitative methods for organizational research: A preface. *Administrative Science Quarterly*, 24(4), 520-526.
- Van Meter, K. (1990). Methodological and design issues: techniques for assessing the representatives of snowball samples. *NIDA Research Monograph*, 98(51.40), 31-43.
- Vedula, S., & Kim, P. H. (2018). Marching to the beat of the drum: the impact of the pace of life in US cities on entrepreneurial work effort. *Small Business Economics*, 50(3), 569-590.
- Venkataraman, S. (1997). The distinctive domain of entrepreneurship research. *Advances in Entrepreneurship, Firm Emergence and Growth*, 3(1), 119-138.
- Vereshchagina, G. (2019). The role of individual financial contributions in the formation of entrepreneurial teams. *European Economic Review*, 113, 173-193.
- Verheul, I., Uhlaner, L., & Thurik, R. (2005). Business accomplishments, gender and entrepreneurial self-image. *Journal of Business Venturing*, 20(4), 483-518.
- Walter, A., Auer, M., & Ritter, T. (2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing*, 21(4), 541-567.
- Wang, H. C., He, J., & Mahoney, J. (2009). Firm-specific knowledge resources and competitive advantage: The roles of economic- and relationship-based employee governance mechanisms. *Strategic Management Journal*, 30(12), 1265-1285.
- Warr, P. (2018). Self-employment, personal values, and varieties of happiness–unhappiness. *Journal of Occupational Health Psychology*, 23(3), 388-401.
- Weber, R. (1980). Some characteristics of free recall of computer controls by EDP auditors. *Journal of Accounting Research*, 18, 214–241.
- Westhead, P. (1995). New owner-managed businesses in rural and urban areas in Great Britain: A matched pairs comparison. *Regional Studies*, 29, 367-380.
- Westhead, P., & Wright, M. (1998a). Novice, portfolio, and serial founders: Are they different?. *Journal of Business Venturing*, 13(3), 173-204.

- Westhead, P., & Wright, M. (1998b). Novice, portfolio, and serial founders in rural and urban areas. *Entrepreneurship Theory and Practice*, 22(4), 63-100.
- Westhead, P., Ucbasaran, D., & Wright, M. (2003). Differences between private firms owned by novice, serial and portfolio entrepreneurs: Implications for policy makers and practitioners. *Regional Studies*, 37(2), 187-200.
- Westhead, P., Ucbasaran, D., & Wright, M. (2005a). Decisions, actions, and performance: do novice, serial, and portfolio entrepreneurs differ?. *Journal of Small Business Management*, 43(4), 393-417.
- Westhead, P., Ucbasaran, D., & Wright, M. (2005b). Experience and cognition: do novice, serial and portfolio entrepreneurs differ?. *International Small Business Journal*, 23(1), 72-98.
- Westhead, P., Ucbasaran, D., & Wright, M. (2009). Information search and opportunity identification: The importance of prior business ownership experience. *International Small Business Journal*, 27(6), 659-680.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.
- Wernerfelt, B., & Montgomery, C. A. (1988). Tobin's q and the importance of focus in firm performance. *The American Economic Review*, 78(1), 246-250.
- Williamson, O. (1975). *Markets and Hierarchies*. New York: Ed.
- Williamson, O. E. (1991). Comparative economic organization: The analysis of discrete structural alternatives. *Administrative Science Quarterly*, 36(2), 269-296.
- Wiklund, J., & Shepherd, D. A. (2008). Portfolio entrepreneurship: Habitual and novice founders, new entry, and mode of organizing. *Entrepreneurship Theory and Practice*, 32(4), 701-725.
- Wiklund, J., Nikolaev, B., Shir, N., Foo, M. D., & Bradley, S. (2019). Entrepreneurship and well-being: Past, present, and future. *Journal of Business Venturing*, 34(4), 579-588.
- Woo, C. Y., Cooper, A. C., & Dunkelberg, W. C. (1991). The development and interpretation of entrepreneurial typologies. *Journal of Business Venturing*, 6(2), 93-114.
- Woo, C.Y., Cooper, A.C., and Dunkelburg, W.C. (1988). *Entrepreneurial typologies: Definitions and implications*. Paper presented at Babson Entrepreneurship Research Conference, Calgary, Canada.

- Wright, M., Hoskisson, R. E., Busenitz, L. W., & Dial, J. (2000). Entrepreneurial growth through privatization: The upside of management buyouts. *Academy of Management Review*, 25(3), 591-601.
- Wright, M., Robbie, K., & Ennew, C. (1997). Serial entrepreneurs. *British Journal of Management*, 8(3), 251-268.
- Wrigley, L. 1970. *Divisional autonomy and diversification*. Doctoral thesis, Harvard Business School.
- Yayavaram, S., & Ahuja, G. (2008). Decomposability in knowledge structures and its impact on the usefulness of inventions and knowledge-base malleability. *Administrative Science Quarterly*, 53(2), 333-362.
- Ye, G., Priem, R. L., & Alshwer, A. A. (2012). Achieving demand-side synergy from strategic diversification: How combining mundane assets can leverage consumer utilities. *Organization Science*, 23(1), 207-224.
- Young-Ybarra, C., & Wiersema, M. (1999). Strategic flexibility in information technology alliances: The influence of transaction cost economics and social exchange theory. *Organization Science*, 10(4), 439-459.
- Yu, L., & Artz, G. M. (2019). Does rural entrepreneurship pay?. *Small Business Economics*, 53(3), 647-668.
- Zahra, S. A., & Covin, J. G. (1995). Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis. *Journal of Business Venturing*, 10(1), 43-58.
- Zahra, S. A., Ireland, R. D., & Hitt, M. A. (2000). International expansion by new venture firms: International diversity, mode of market entry, technological learning, and performance. *Academy of Management Journal*, 43(5), 925-950.
- Zenger, T. R. (1994). Explaining organizational diseconomies of scale in R&D: Agency problems and the allocation of engineering talent, ideas, and effort by firm size. *Management Science*, 40(6), 708-729.
- Zhang, J., Souitaris, V., Soh, P. H., & Wong, P. K. (2008). A contingent model of network utilization in early financing of technology ventures. *Entrepreneurship Theory and Practice*, 32(4), 593-613.
- Zhang, G., Peng, X., & Li, J. (2008). Technological entrepreneurship and policy environment: a case of China. *Journal of Small Business and Enterprise Development*, 15(4), 733-751.
- Zhang, J. (2013). Marketization beyond neoliberalization: A neo-Polanyian perspective on China's transition to a market economy. *Environment and Planning A*, 45(7), 1605-1624.

- Zhang, Y., & Rajagopalan, N. (2003). Explaining new CEO origin: Firm versus industry antecedents. *Academy of Management Journal*, 46(3), 327-338.
- Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197-206.
- Zheng, Y., Devaughn, M. L., & Zellmer-Bruhn, M. (2016). Shared and shared alike? Founders' prior shared experience and performance of newly founded banks. *Strategic Management Journal*, 37(12), 2503-2520.
- Zhou, L., Wu, W. P., & Luo, X. (2007). Internationalization and the performance of born-global SMEs: the mediating role of social networks. *Journal of International Business Studies*, 38(4), 673-690.
- Zhou, Y. M. (2011). Synergy, coordination costs, and diversification choices. *Strategic Management Journal*, 32(6), 624-639.
- Zhong, W., Li, L., Lu, J., Peng, S., Pan, J., Hao D., & Wang Y. (2017). Chinese enterprise innovation trend index: Innovation environment, strategy and future—2017 Special survey report on the growth and development of Chinese entrepreneurs. *Management World*, 6, 37-50.
- Zhu, F., Jin, F., Wu, H., & Wen, F. (2019). The impact of oil price changes on stock returns of new energy industry in China: A firm-level analysis. *Physica A: Statistical Mechanics and Its Applications*, 532, 121878.
- Zimmerman, M. A., & Zeitz, G. J. (2002). Beyond survival: Achieving new venture growth by building legitimacy. *Academy of Management Review*, 27(3), 414-431.

Appendix 1. Adapted Job Satisfaction Scale

The original scale developed by Andrews and Withey (1976):

1. How do you feel about your job?
2. How do you feel about the people you work with--your coworkers?
3. How do you feel about the work you do on your job--the work itself?
4. What is it like where you work--the physical surroundings, the hours, the amount of work you are asked to do?
5. How do you feel about what you have available for doing your job--I mean equipment, information, good supervision and so on?

Adapted Scale:

1. How do you feel about your job?
2. How do you feel about the people you work with--your employees and partners?
3. How do you feel about the work you do on your job--the work itself?
4. What is it like where you work--the physical surroundings, the hours, the amount of work?
5. How do you feel about what you have available for doing your job--I mean equipment, information and so on?

Appendix 2. Letter of Information and Consent

Project Title: Exploring the Heterogeneity among Portfolio Entrepreneurs: A Typology Approach

Principal Investigator: Dr. Simon Parker, Professor, Ivey Business School, Western University

Research Support Staff: Tianjiao Xu, PhD Student, Ivey Business School, Western University

Letter of Information

Why are you here?

You are invited to participate in a research study being conducted by researchers at Ivey Business School about the your experience as an entrepreneur and the way you hire professional managers to help manage your new business. The purpose of this letter is to provide you with the information required to make an informed decision regarding your participation in this research study.

How long will this study take?

We expect the study to take about 15 minutes to complete.

What will happen to you during this study?

If you agree to participate in this study, we would ask you some questions about your newest registered business. We're particularly interested in how you manage your newest business with help of professional managers. We will also ask some questions about your older businesses if you have founded other businesses that are still in operation. You will then be asked to answer a few basic questions about your attitude toward multi-tasking and risk-taking as well as your demographic characteristics.

This will be an online survey administered via a link. However, If you would like to fill out the paper version of the survey, please contact the research team and we will send you the survey via email so you can print it, fill it and send it back to us using registered mail. The research team will cover the costs of shipping upon receipt of the mail.

Potential Risks and Discomforts?

There are no known or anticipated risks or discomforts associated with participating in this study.

Compensation for Participation?

You will not be compensated for your participation in this research. You may not directly benefit from participating in this study but information gathered may provide benefits to society as a whole which include more effective policy-making and higher economic growth.

Can you choose to leave the study?

Participation in this study is strictly voluntary. At any time you may refuse to participate, refuse to answer any questions, or choose to withdraw from the study with no effect on you whatsoever. As this is an anonymous online survey, once you submit your responses, you will be unable to request withdrawal of your data as we will be unable to identify your individual data to remove it from our dataset. If you are filling out the paper survey, since no identifiable information is collected, we will also not be able to remove your data once you have returned the survey.

Who will see the information that you give?

We will make every effort to keep confidential all research records that identify you to the extent allowed by law. Your information will be combined with information from other people taking part in the study. When we write about the study, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, there will be no reference to personally identifiable information.

Your online survey responses will be collected anonymously through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland, where privacy standards are maintained under the European Union safe harbour framework. The data will then be exported from Qualtrics and securely stored on Western University's server.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Since this is an anonymous, online survey (or paper as requested), your questionnaire responses will not be directly identifiable after the completion of the survey.

However, there are some circumstances in which we may have to show your information to other people. Representatives of the University of Western Ontario Non-Medical Research Ethics Board may require access to study-related records to monitor the conduct of research.

Who to Contact with Questions?

If you require any further information regarding this research project or your participation in the study you may contact Professor Simon Parker and Tianjiao Xu. In the case of filling out a paper survey, you can mail the finished survey back to us using the following address:XXX. Please use a pseudonym on the envelope and the cost of shipping will be paid by the research team upon receipt of the mail.

If you have any questions about your rights as a research participant, you may contact The Office of Human Research Ethics. The long distance OHRE number is: X-XXX-XXX-XXXX. You do not waive any legal right by consenting to participate.

If you would like to receive a copy of any potential study results, please contact Tianjiao Xu at the email address shown above.

If you would like a copy of this letter, please contact Tianjiao Xu at XXX.

IMPLIED CONSENT (will be presented as a forced response question when filling out the electronic survey)

I have read the letter of information, have understood the nature of the study and by choosing “I consent” below and moving ahead with the survey, I am agreeing to participate. I retain the right to withdraw myself and data at any point.

- I CONSENT to take part in this study.
 I DO NOT CONSENT to take part in this study.

Appendix 3. Survey Questionnaire

Start of Block: LOI/C

Q1 Project Title: Exploring the Heterogeneity among Portfolio Entrepreneurs: A Typology Approach. Principal Investigator: Dr. Simon Parker, Professor, Ivey Business School, Western University Research Support Staff: Tianjiao Xu, PhD Student, Ivey Business School, Western University

Letter of Information:

Why are you here? You are invited to participate in a research study being conducted by researchers at Ivey Business School about your experience as an entrepreneur and the way you hire professional managers to help manage your new business. The purpose of this letter is to provide you with the information required to make an informed decision regarding your participation in this research study. How long will this study take? We expect the study to take about 15 minutes to complete. What will happen to you during this study? If you agree to participate in this study, we would ask you some questions about your newest registered business. We're particularly interested in how you manage your newest business with help of professional managers. We will also ask some questions about your older businesses if you have founded other businesses that are still in operation. You will then be asked to answer a few basic questions about your attitude toward multi-tasking and risk-taking as well as your demographic characteristics. This will be an online survey administered via a link. However, if you would like to fill out the paper version of the survey, please contact the research team and we will send you the survey via email so you can print it, fill it and send it back to us using registered mail. The research team will cover the costs of shipping upon receipt of the mail. Potential risks and discomforts? There are no known or anticipated risks or discomforts associated with participating in this study. Compensation for participation? You will not be compensated for your participation in this research. You may not directly benefit from participating in this study but information gathered may provide benefits to society as a whole which include more effective policy-making and higher economic growth. Can you choose to leave the study? Participation in this study is strictly voluntary. At any time you may refuse to participate, refuse to answer any questions, or choose to withdraw from the study with no effect on you whatsoever. As this is an anonymous online survey, once you submit your responses, you will be unable to request withdrawal of your data as we will be unable to identify your individual data to remove it from our dataset. If you are filling out the paper survey, since no identifiable information is collected, we will also not be able to remove your data once you have returned the survey. Who will see the information that you give? We will make every effort to keep confidential all research records that identify you to the extent allowed by law. Your information will be

combined with information from other people taking part in the study. When we write about the study, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, there will be no reference to personally identifiable information. Your online survey responses will be collected anonymously through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland, where privacy standards are maintained under the European Union safe harbour framework. The data will then be exported from Qualtrics and securely stored on Western University's server. We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Since this is an anonymous, online survey (or paper as requested), your questionnaire responses will not be directly identifiable after the completion of the survey. However, there are some circumstances in which we may have to show your information to other people. Representatives of the University of Western Ontario Non-Medical Research Ethics Board may require access to study-related records to monitor the conduct of research. Who to contact with questions? If you require any further information regarding this research project or your participation in the study you may contact Professor Simon Parker and Tianjiao Xu. In the case of filling out a paper survey, you can mail the finished survey back to us using the following address:XXX. Please use a pseudonym on the envelope and the cost of shipping will be paid by the research team upon receipt of the mail. If you have any questions about your rights as a research participant, you may contact The Office of Human Research Ethics. The long distance OHRE number is: X-XXX-XXX-XXXX. You do not waive any legal right by consenting to participate. If you would like to receive a copy of any potential study results, please contact Tianjiao Xu at the email address shown above. If you would like a copy of this letter, please contact Tianjiao Xu at XXX. **IMPLIED CONSENT** I have read the letter of information, have understood the nature of the study and by choosing "I consent" below and moving ahead with the survey, I am agreeing to participate. I retain the right to withdraw myself and data at any point.

- I CONSENT to take part in this study.
- I DO NOT CONSENT to take part in this study.

Skip To: End of Block If Project Title: Exploring the Heterogeneity among Portfolio Entrepreneurs: A Typology Approach Pr... = I CONSENT to take part in this study.
Skip To: End of Survey If Project Title: Exploring the Heterogeneity among Portfolio Entrepreneurs: A Typology Approach Pr... = I DO NOT CONSENT to take part in this study.

End of Block: LOI/C

Start of Block: Basic information

Q2 How long have you been an entrepreneur (in years)?

Q3 How many businesses have you founded or cofounded in total?

Q4 How many years of managerial experience did you have prior to starting your own business?

- 0 year
- 1-5 years
- 5-10 years
- 10-20 years
- 20 years or more

Q5 Have you founded or cofounded and remained an active role in managing more than one business simultaneously?

- Yes
 - No
-

Q6 How many years of industry experience do you have in the industry of your newest business?

- None
 - 1-3 years
 - 4-6 years
 - 7-9 years
 - 10 years or more
-

Q7 How many equity partners do you have? Equity partners are people with ownership stakes in your current business. If you have more than one business, please think about the newest one

- 0 (I am the sole owner)
 - 1-3
 - 4-6
 - 7-9
 - 10 or more
-

Q8 How many full-time employees do you have in your current business? If you have more than one business, please think about the newest one

Q9 How many employees do you expect to have in five years for your newest business?

Q10 When was your newest business established? Please indicate the date of business registration

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q11

Please write down the founding time of all the firms you founded or cofounded that you're still involved in. For example, you have founded three firms that are still in operation, one in 2003, one in 2005 and another one in 2008, then please write down: 2003, 2005, 2008.

End of Block: Basic information

Start of Block: Synergizers vs Non-synergizers

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q12 Which industry is your primary focus? If you are involved in multiple industries, please write down the one where you're getting the highest profits

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q13 How many years of industry experience do you have in the industry of your primary business?

- Less than 1 year
- 1-3 years
- 4-6 years
- 7-9 years
- 10 years or more

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q14 Is your newest business in your primary industry?

- Yes
- No

Display This Question:

If Is your newest business in your primary industry? = No

Q15 Which industry is your new business in?

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q16 How many businesses do you currently own and manage? Each business needs to be a separate legal entity that is generating its own revenue streams

- 1
 - 2
 - 3
 - 4
 - Number of businesses if 5 or more
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q17 Is there synergy between the new business and your existing business(es)? Please select yes if the presence of your new business helps (1) reduce costs OR (2) increase revenue at your other business(es). Otherwise, please select no.

- Yes
 - No
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q18 When the new business is added, please rate to what extent the addition of the new business has the following effects on your other business(es):

	Very small effect	Small effect	Moderate effect	Large effect	Very large effect
Cost reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Revenue increases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Growth potential increases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q19 How many employees are involved in development of the product/services in your primary business? If you have multiple products/services, please think about the average across all products/services

- 1-5
- 6-10
- 11-15
- 16-20
- More than 20 hours

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q20 On average, how many weeks does each employee need to spend on development and delivery of the product/services in your primary business?

- Less than one month
 - 1-2 months
 - 3-4 months
 - 5-6 months
 - 7-8 months
 - 9-10 months
 - 11-12 months
 - Over one year
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q21 How many different disciplines are required to produce the product/deliver the services in your primary business?

- 1-2
 - 3-4
 - 5-6
 - 7-8
 - 9-10
 - More than 10 disciplines
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q22 Consider the key technology that your primary business relies on. What is the number of uses/markets to which that specific technology can be applied to?

- Only 1 market
 - 2-3 markets
 - 4-5 markets
 - More than 5 markets
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q23 Consider the key technology that your primary business relies on. Typically, how much investment (in R&D and production) do you need to make in order to apply the technology to a new market?

- Very low
 - Low
 - Moderate
 - High
 - Very high
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q24 Please think about a typical employee at your primary business, how many years of experience does he/she have in your primary industry?

- Less than 1 year
- 2-5 years
- 6-10 years
- More than 10 years

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q25 Please think about a typical employee at your primary business, how many years of education does he/she have?

- High school diploma or below
 - College diploma
 - Undergraduate degree
 - Master's degree
 - Doctoral degree
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q26 Please think about a typical employee at your primary business, how many organizations does he/she have worked for prior to joining your firm?

- 0
 - 1-2
 - 3-4
 - More than 5 organizations
-

Q27 Please think about the new business now, do you agree to the following statement? "There are usually few potential buyers/sellers for the product/service that I am producing/delivering."

- Yes
 - No
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q28 Consider all the businesses (founded by you) you are currently actively involved in, what is the approximate percentage of sales your newest business contributes to the total sales of your portfolio?

- Less than 10%
 - 20-30%
 - 40-50%
 - 60-70%
 - 80-90%
 - More than 90%
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q29 Consider all the businesses (founded by you) you are currently actively involved in, what is the average ROI (return on investment) across all your active businesses? $ROI = (\text{Current Firm Value} - \text{Investment}) / \text{Investment}$

- 10% to 0%
 - 1% to 10%
 - 11% to 20%
 - 21% to 50%
 - > 50%
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q30 Why do you choose to establish a new firm to exploit the opportunity? Why not include it in your existing business(es)?

End of Block: Synergizers vs Non-synergizers

Start of Block: Agency Related Questions

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q31 How many top managers (I mean professional managers, excluding yourself and co-founders) do you have **across all your businesses**? Please think about the top-tier managers.

- 0
- 1-3
- 4-6
- 7-9
- 10 or more

Skip To: Q38 If How many top managers (I mean professional managers, excluding yourself and co-founders) do you h... = 0

Q32 How many hired top managers do you have to help manage your **newest business**?

- 0
- 1-3
- 4-6
- 7-9
- 10 or more

Skip To: Q38 If How many hired top managers do you have to help manage your newest business? = 0

Q33 The following questions concern your newest registered business:

How long have you known the CEO of the new business? If you are the CEO, please think about the other key person who is in charge

- Less than one year
 - 2-4 years
 - 5-7 years
 - 8-10 years
 - Over 10 years
-

Q34 How long has the CEO been in his/her current position?

- Less than one year
 - 2-4 years
 - 5-7 years
 - 8-10 years
 - Over 10 years
-

Q35 How many years of industry experience does the CEO have in the industry of the new business?

- None
 - 1-3 years
 - 4-6 years
 - 7-9 years
 - 10 years or more
-

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q36 Was the CEO of the new business an employee at one of your other businesses?

- Yes
 - No
-

Q37 Is the CEO of the new business a co-founder?

- Yes
 - No
-

Q38 Is there a venture board for your new business?

- Yes
 - No
-

Display This Question:

If Is there a venture board for your new business? = Yes

Q39 How many members are there in the venture board as of this year?

Display This Question:

If Is there a venture board for your new business? = Yes

Q40 How many venture board members are external? External means that they have never been employees of the firm, are not related to any employee of the firm, and do not work for a company with significant business relationships with the firm

Yes

No

End of Block: Agency Related Questions

Start of Block: Direct monitoring questions

Display This Question:

If How many hired top managers do you have to help manage your newest business? = 1-3

And How many hired top managers do you have to help manage your newest business? = 4-6

And How many hired top managers do you have to help manage your newest business? = 7-9

And How many hired top managers do you have to help manage your newest business? = 10 or more

Q41 Think about your newest firm. Please rate to what extent you agree with the following statements:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
"I spent considerable time and effort monitoring how well the CEO was meeting firm-level goals"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I frequently participated in formal reviews of the CEO where progress toward firm-level goals was checked"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I frequently received reports from the CEO that indicated progress toward firm-level goals"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I frequently discussed progress toward the firm's goals with employees"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I continually assessed the behaviors and actions of the employees"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please select
"Neither
agree nor
disagree"
here

Q42 Please think about your newest firm and rate to what extent do you agree with the following paragraph: "I practice a high level of delegation of key decision making in this company. Our decision group must reach consensus for action to occur. Although I know what should be done, I seek more information when decision making, because decisions must be justified to others. I can stop, reverse or inspire the implementation of decisions in the company"

- Strongly disagree
 - Somewhat disagree
 - Neither agree nor disagree
 - Somewhat agree
 - Strongly agree
-

Q43 If a front-line employee has a new product, process or service idea, it will pass through ___ layers of management before reaching me

- 1
- 2
- 3 or more

End of Block: Direct monitoring questions

Start of Block: Incentives

Display This Question:

If How many hired top managers do you have to help manage your newest business? = 1-3

And How many hired top managers do you have to help manage your newest business? =

4-6

And How many hired top managers do you have to help manage your newest business? =

7-9

And How many hired top managers do you have to help manage your newest business? =

10 or more

Q44 Please think about the compensation for the CEO, the key person (excluding yourself) you hired to oversee the daily operations of the new business:

Are incentives used for the CEO's compensation? Incentives include stock options and equity holdings.

Yes

No

Display This Question:

If How many hired top managers do you have to help manage your newest business? = 1-3

And How many hired top managers do you have to help manage your newest business? =

4-6

And How many hired top managers do you have to help manage your newest business? =

7-9

And How many hired top managers do you have to help manage your newest business? =

10 or more

Q45

Please think about the compensation for the CEO at your newest business and answer the following questions:

	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
To what extent the compensation for the CEO focuses the CEO's attention on the long-term (two or more years) goals of the firm?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To what extent the compensation for the CEO rewards the CEO for short-term accomplishments during a fixed time period (e.g., semiannual or annual firm performance reviews)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To what extent the compensation for the CEO recognizes that long-term firm results are more important than short-term firm results?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Incentives

Start of Block: Performance

Q46 Please rate your new firm's performance compared to the industry's average in the last year (2018)

	Lowest 20%	Below average	Average	Above average	Top 20%
Sales growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Market share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Return on Investment (ROI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Return on Assets (ROA)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Return on Sales (ROS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q47 Do you intend to continue growing the new firm?

- Yes
- No

End of Block: Performance

Start of Block: Work Satisfaction

Q48 Please think about your newest venture and rate the following statements

	Terrible	Unhappy	Mostly dissatisfied	Mixed	Mostly satisfied	Pleased	Delighted
How do you feel about your job?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How do you feel about the people you work with-- your employees and partners?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How do you feel about the work you do--the work itself?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is it like where you work-- the physical surroundings, the hours, the amount of work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How do you feel about what you have available for doing your job? I mean equipment, information and so on?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Work Satisfaction

Start of Block: Collocation

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q49 How far is your new business from your primary business? For example, if the new business is located 10 km away, please enter 10

Display This Question:

If Have you founded or cofounded and remained an active role in managing more than one business simu... = Yes

Q50 How long does it take to travel from your primary business to the new business? Please select the shortest travelling time

- Less than 30 min
- 30-60 min
- 60-90 min
- 90-120 min
- More than 120 min

Q51 What is the monthly rent (per square meter) of the office area for your new business?

End of Block: Collocation

Start of Block: Capital Structure

Q52 Think about your newest business **at the initial stage**, please answer the following questions:

	0	1-25%	26-50%	51-75%	76-100%
Venture capital as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business angels and private investors as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Private equity as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Long-term loan as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short-term loan as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My personal savings and funds from friends and family as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q53 Think about your newest business **as of now**, please answer the following questions:

	0	1-25%	26-50%	51-75%	76-100%
Venture capital as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business angels and private investors as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Private equity as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Long-term loan as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short-term loan as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My personal savings and funds from friends and family as a source of finance is about __% of total finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Capital Structure

Start of Block: Social Capital

Q54 Please rate how important you think it is to...

	Not important at all	Somewhat important	Secondary focus	Primary focus
cultivate ties with local government agencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
strengthen ties with local communities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
utilize local social networks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Social Capital

Start of Block: Preference for Multi-tasking

Q55 Please rate to what extent you agree with the following statements:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
"I do not like to juggle several activities at the same time"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"People should not try to do many things at once"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"When I sit down at my desk, I'm used to working on one problem at a time"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I am comfortable doing several things at the same time"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please select "Somewhat disagree" here	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Preference for Multi-tasking

Start of Block: Risk Propensity

Q56 Please rate to what extent you agree with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
"I have a strong preference for high-risk projects"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I view bold acts as useful"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I favor the tried and true"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I would choose to follow competitors instead of introducing new products ourselves first"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I prefer to let other firms in our industry assume the risk of product or process innovations before adopting them in our firm"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Risk Propensity

Start of Block: Demographic information

Q57 Which city are you currently living in?

Q58 Which country are you a citizen of?

Q59 In what year were you born?

Q60 What is the highest degree or level of school you have completed?

- High school diploma or below
- Technical college
- Bachelor's degree
- Master's degree
- Doctoral degree
- I prefer not to say

Q61 What is your gender?

- Male
 - Female
 - I prefer not to say
 - You're welcome to provide your self-chosen gender identity here
-

Q62 Are you married?

- Yes
 - No
-

Q63 How many children do you have?

- None
 - 1
 - 2
 - 3 or more
-

Q64 Are any of your parents entrepreneurs?

- Yes
 - No
-

Q65 Is your business a family business? If you have more than one business, please select yes if one of them is a family business

Yes

No

End of Block: Demographic information
