NHH

ENTREPRENEURSHIP IN RECESSION

ENTREPRENEURS, FIRMS & PERFORMANCE

by

Sujit Pandey

S116534

Supervisor: Professor Lasse B. Lien

THESIS

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Abstract

This thesis is a foundational work for PhD in the same topic that I have applied for at the Norwegian School of Economics. It discusses the theoretical background of the research area, the research questions and the variables implicit in those research questions, how those variables have been measured in existing literature and how I aim to measure them, the statistical approaches and the significance of the study to various stakeholders.

The broader question I aim to answer in my study is – how do the firms founded during recessions compare to the economic-growth cohort with regards to the characteristics of entrepreneurs starting them, the firm-level characteristics and the performance of the firms. I believe that the relevance of this study is highlighted by the recent recession, the effects of which are still evident in almost every world economy.

Throughout the thesis, I have reflected on the work done so far in related areas that could shed light into my proposed work. I have referred to significant amount of literature assessing the caveats in past studies in entrepreneurial studies in general. I have discussed their methodological approaches and analyzed their relevance to my proposed work.

After rigorous review of literature, I found that there has been very little work done in this particular area of entrepreneurship. I believe that my study will have some significant takeaways for entrepreneurs, businesses in general, policy makers and entrepreneurship literature.

Foreword

I had a decision to make in the June of 2012 when I had in my hand the letters of admission from different institutions from different parts of the world. That choice would determine not only the next two years of my life, but also, potentially, the rest of my life. My curiosity about the egalitarian Scandinavia and the prestige of Norges Hangelshøyskole (NHH) led me to Norway and what an experience it has been since my arrival. This institution provided me with opportunities that were so beyond my reach before. I am on the verge of graduating with Masters in Economics & Business administration and CEMS Masters in International Management. For that, I want to express my heartfelt gratitude to Norway, NHH, all the academic and administrative members, and amazing friends I came across in this esteemed institution.

This thesis is written as a part requirement of Masters in Economics and Business Administration program. It is a unique kind of thesis given its nature. It is written as a preparatory work for the PhD program here at NHH that I have applied for. It outlines the area, research questions, analytical approach and significance of the study I have proposed. While there is not analysis of data per se, I have tried to be more analytical on the approaches that have been used so far and what I will use. Given the complexity of the study, I realize that I will perhaps need to revisit some of my plans if/when I have the chance to do the study. This thesis writing process has been a valuable learning experience for me.

Finally, I want to express my sincerest gratitude to Professor Lasse B. Lien for his guidance and support throughout the process. This would have been far from possible without him.

Sujit Pandey

Bergen, November 12, 13

Table of Contents

List of Tables:

List of Figures:

1. Introduction

1.1 The context

The Great Recession, triggered by the collapse of subprime mortgage market, deeply affected businesses, economy in general, politics and the personal lives of many. If we take an example of the US economy, lots of businesses went bankrupt, contributed hugely to the victory of Barack Obama in the presidential election, and millions of people lost their jobs and houses. The struggling economies around the world probably suggest that many of these victims are still licking their wounds inflicted upon them by the Great Recession. The high magnitude of the effect caused by the recent recession is probably down to its depth; it was the worst downturn since the Great depression (Shane, 2011).

For students of economics and business, at least in my perspective, to see the stark effects of the recent recession first hand served as a great learning experience. To me it was quite intriguing. In terms of arousing curiosity in me, I would compare it to the partial solar eclipse in 1996 that I observed in Nepal through solar filters as a kid. Figuratively, what is recession but a partial-eclipse[1] on the economy! Hence originated my fascination of recessions in particular and business cycles in general.

I owe most of my interest in the entrepreneurial literature to Schumpeter and his seminal works (for example Schumpeter, 1934) in the field. He almost romanticized entrepreneurs for me with his descriptions (like "agents of change", seeing things others cannot, and bringing about "creative destructions"). For a layman, and I was a layman in the field then and now a rookie, an entrepreneur is almost like a super-hero in an economy. Hence originated my fascination of entrepreneurs and the process of entrepreneurship. This fascination was further fueled by my job as a relationship manager, where I was exposed to the world of entrepreneurs. I was supposed to assess the qualities of entrepreneurs and their firms that sought credit facilities from my bank. I witnessed firms being founded, and succeed and fail. Hence grew my fascination of entrepreneurship!

So when I decided that PhD was the next step ahead for me in my career, combining these

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[1] I saved the total-eclipse analogy for depression.

[2] These can perhaps be seen as equivalents to "innovators" and "creative imitators" used by Drucker.

two phenomena that have deeply intrigued me seemed like a very natural way to go. Hence rose my desire to research on the firms founded during recession – what kind of entrepreneurs starts these firms, what are these firms like and how do these firms fare compared to firms founded during economic growth.

1.2 Business Cycle

Burns and Mitchell (1946, p. 3) defined business cycle as "a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; in duration, business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles of similar characteristics with amplitudes imitating their own." A business cycle consists of a *peak* followed by *contraction* or *recession* and a trough followed by *recovery* and *expansion* as explained below.

Components of business cycle:

Peak is the maximum level that aggregate economic activity reaches. Contraction or recession is defined as period of significant decline in total output, income, employment and trade. A depression is a recession that is major in scale and duration. Trough is the minimum level that aggregate economic activity reaches. Recovery is a period of significant increase in total output, income, employment and trade. Boom is a period of extended economic expansion where aggregate economic activity is high and rising (berkley.edu, 2013).
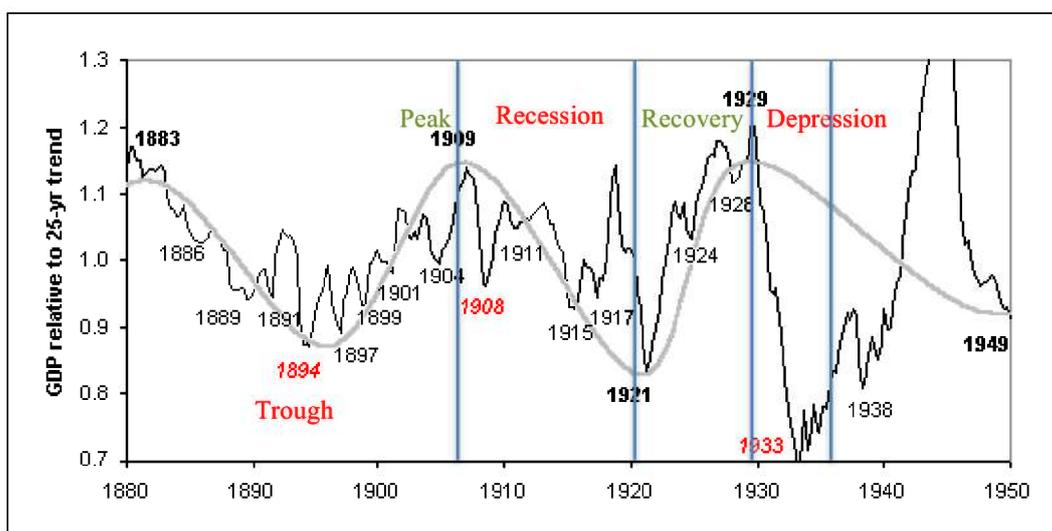
Figure 1: Business Cycles in the US (1880-1950), (Source: NBER)

1.3 Recession

The National Bureau of Economic Research (2010), which is the official tracker of economic cycles in the United States of America, defines recession as a period between a peak and a trough (of a business cycle) during which a significant decline in economic activity spreads across the economy. Recessions are characterized by negative real GDP growth and increase in unemployment. They can be induced by various factors. Historically, recessions have been induced by several factors like the bursting of housing bubble (2008-2009), the bursting of dot-com bubble (2001), the oil price shock (1973) etc.

Recession is not that rare an economic phenomenon. Excluding the great recession, the US has had seven recessions since 1960 resulting in a cumulative loss of 3.16% in output and Norway had 3 recessions with a loss of 2.99% in output (Claessens, Kose, & Terrones, 2009). While the recent recession had a huge impact in the US, resulting in negative 2.6% GDP growth rate, it was less severe in Norway with negative 1.4% GDP growth rate in 2010. The GDP growth rate of the two countries highlighting the dip in the great recession is shown in the figure 1 in appendix. Further, figure 2 in appendix shows the severity of recession felt in different parts of the world.

1.4 Entrepreneurship

The word entrepreneur comes from the French verb *entreprendre*, which means, "to undertake". Entrepreneurship has been defined in the past, and continues to be in the present, in various ways by different authors. Over the decades, an entrepreneur has been described as a coordinator (Arnold, 1996), risk bearer (Knight, 1921) or innovator (Kirzner, 1985; Leibenstein, 1995). Kirzner defines the process of innovation as spontaneous undeliberate learning (Kirzner, 1985, p. 10) while for Leibenstein it is the ability to spot where market fails and develop new products, goods or processes that the market demands. While many agree that innovation is an important part of entrepreneurship process, it is not all. For example Drucker (1985) described creative imitation as another aspect of entrepreneurship, which probably describes a lot of entrepreneurs coming from places like China or other developing and underdeveloped countries. Creative imitation is the process of taking an innovative product and tailoring it to a particular niche or local market to better serve their needs.

These different definitions of entrepreneur(ship) exist because entrepreneurship has been looked at from various theories (Gedeon, 2010). Gedeon observes that entrepreneurship has been described in term of dynamic change, new combinations, exploiting opportunities, innovation, price arbitrage, risk, uncertainty, ownership, new-venture formation, non-control of resources, asymmetries of information, superior decision-making, monopoly formation or something else. He then concludes that while these point of views had previously been thought of as contradictory, these actually are complimentary definitions describing different sub-domains of entrepreneurship such as business, social, academic, family business etc. entrepreneurship.

Filion (2011) proposes that any comprehensive definition of entrepreneurship should encompass six main components: 1) innovation, 2) opportunity recognition, 3) risk management, 4) action, 5) use of resources and 6) added value. He goes on to provide some sample definitions, one of which defines entrepreneur as:

"An intuitive, resourceful, tenacious actor who is able to recognize and develop risky opportunities with potential for innovation, and who adds value to what already exists by setting up activities that involve a scarce use of resources." (p. 10)

Ahmad and Seymour (2008) have distilled from various past works done in the field, the following definitions of entrepreneur, entrepreneurial activity and entrepreneurship:

Entrepreneurs are those persons (business owners) who seek to generate value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets.

Entrepreneurial activity is the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets.

Entrepreneurship is the phenomenon associated with entrepreneurial activity.

1.5 Recession and Entrepreneurship

What is common between these companies: General Electric (1890), IBM (1896), General Motors (1908), Disney (1923), Burger King (1953), Microsoft (1975) and CNN (1980)?

They were all founded during economic downturns!

* Recessionary periods are represented by shaded areas.
Source: Kauffman Foundation; Analysis by TrendsSpotting, 2010
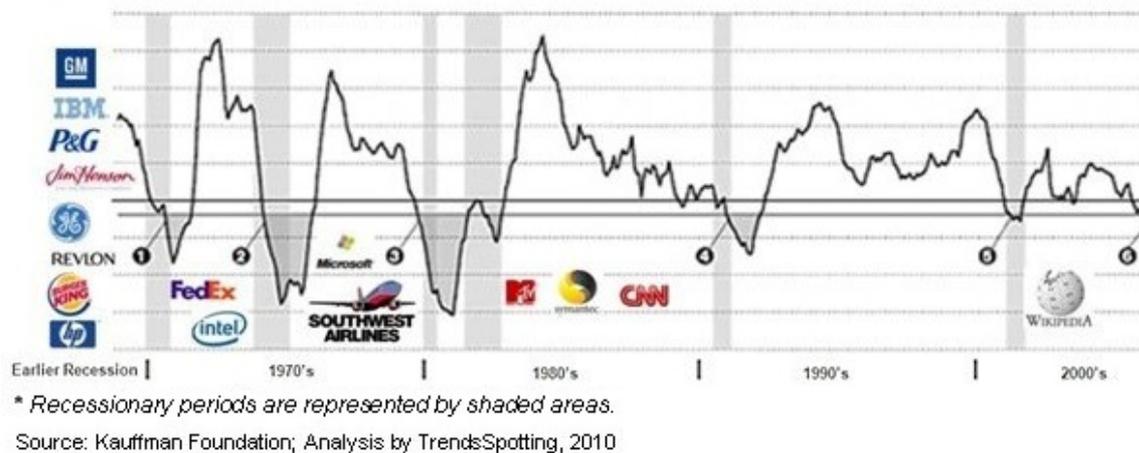
Figure 2: Some of the big firms founded during recessions

Not only these, but well over half of companies on the 2009 Fortune 500 list began during recession or a bear market (Stangler, 2009).

Recession and entrepreneurship have an interesting relationship. One of the many areas that are affected during recession is entrepreneurship (Shane, 2011). Different aspects of recession act in opposing directions with regards to entrepreneurship leaving the net effect of those forces decide the fate of entrepreneurship. As Farlie (2011, p. 1) argues, "On the one hand, recessions decrease potential business income and wealth, but on the other hand they restrict opportunities in the wage/salary sector leaving the net effect on entrepreneurship ambiguous."

There is also the interesting dynamic between the reduced supply of finance and increased supply of labor (through increased unemployment), with these forces acting in opposing directions. The issue of financial constraints during recession, which, one can imagine, would demotivate entrepreneurs to start a business. On the other hand, the rising unemployment can give rise to necessity entrepreneurs or cheap labors that opportunity entrepreneurs can exploit, thus increasing the odds of entrepreneurship. Looking at various data sources, Shane (2011) found that the great recession had a negative impact on U.S. entrepreneurship citing the fact, among others, that firm formation in 2009 declined by 17.3% compared to 2007.

In a Schumpeterian sense, the entrepreneurs are the agents of change and economic development who anticipate and maybe even trigger economic booms (Koellinger & Thurik,

2011). These authors find that entrepreneurship granger causes the cycles of world economy and speculate that entrepreneurial behavior lead to positive productivity shocks during recession by diffusing new technologies and products and by innovating themselves. Thus, one could perceive entrepreneurship as a way out of recession into growth.

The complicated relationship between recession and entrepreneurship does not end there. There is another interesting question about the nature of entrepreneurs involved in firm formations during recessions compared to those in economic growth. There have been studies (like Thompson, 2011) which show that the proportion of entrepreneurs starting firms out of necessity rather than motivated by opportunity increases during recession. Thus, there is a difference in the constitution of entrepreneurs between recession and growth. What does this entail regarding the types of firms they constitute and the performance of those firms? These indeed are very interesting question and I intend to explore them.

2. Theoretical Backgrounds & Perspectives

My research deals with the characteristics of entrepreneurs, the firms they create and the performance of those firms, with the effect of recession in background. This study can be considered a special case of entrepreneurship study. So the overarching theories governing my study will be those theories that, in one way or the other, encompass entrepreneurship.

Entrepreneurship is a relatively young field of study considering the fact that it gathered much interest since 1980s (Wennekers & Thurik, 1999; Jones & Wadhwani, 2006). Despite the enormous role entrepreneurs play in any economy, Grebel et al. (2003, p. 2) observe that entrepreneurship lacks a consistent theory that is "adequate to combine the various strands of literature in order to come to an empirically testable model, eventually." Instead, as shown by Virtanen (1997), entrepreneurship borrows various elements of different theories to account for different entrepreneurial phenomena. The table below summarizes his suggestion of different types of theories to explain entrepreneurial process:

Entrepreneurial Process/Properties	Relevant Theories
Environment	Sociological & Anthropological Theories
Personal Traits, Values & Attitudes, Expectations	Psychological Theories
Motivation, Goals & Objectives	Psychological, Economic, and Sociological Theories
Process of Entrepreneurship	Psychological, Economic, and Sociological Theories
Performance	Psychological and Economic Theories

In this section, I will discuss the contribution of five different perspectives/theories that have contributed to understanding of entrepreneurship – a) Austrian View, b) Ecological perspective c) Evolutionary theory d) Resource based view e) Knowledge based view.

2.1 The Austrian View of Entrepreneurship

The Austrian school has had an influential role in the study of entrepreneurship study with prominent works from renowned authors like Schumpeter and Kirzner. The Austrian economists have stressed the special nature of entrepreneur as opposed to neo-classical economists who seem to think that entrepreneurship is a useful historical category but are

analytically nothing special (Cowen, 2003). Uncertainty is one of the key ideas in the Austrian view. They see entrepreneurship as an outcome of the entrepreneurs' willingness to bear uncertainty. There are typically two types of uncertainties - *structural uncertainty* (arising from unknown future) and *parametric uncertainty* (arising from market imperfections, including bounded rationality and opportunism) (Langlois, 2005). The Austrian theorists describe entrepreneur as a fundamental aspect of economic behavior rather.

Schumpeter's Innovative Entrepreneur:

The landmark work of Schumpeter on entrepreneurship was and still is the most renowned concept (Grebel et al., 2003). Schumpeter tried to examine the dynamics behind the economic change and concluded that *innovations* was a major explaining variable in it, and the economic agents responsible for such innovations are the entrepreneurs (ibid). The innovations, according to him, are the combinations of existing knowledge, resource, equitments and so on (Schumpeter, 1934, p. 65). He believed that (potential) entrepreneurs have an ability to recognize an opportunity that others simply cannot see (Sautet, 2000). Such opportunities do not necessarily have to be in the product markets only as Schumpeter (1934) suggests that opportunities also exist in factor markets, as in the case of the discovery of new materials. For example, an entrepreneur may see the high unemployment during recessions as an opportunity to start a firm

One may infer, from his notion of entrepreneur, that the phenomenon of necessity entrepreneurship is understated given the fact that necessity entrepreneurs constitute a significant chunk of entrepreneurs, albeit their contribution to economy may be less that that of opportunity entrepreneurs. Nevertheless, his seminal work has been guiding principles behind the works of many and inspires other theories in their quest to explain entrepreneurship.

Kirzner's Alert Entrepreneur

Israel Kirzner's *Competition and Entrepreneurship* is the most influential text in the last decades of Austrian school (Cowen, 2003). He proposes alertness as an integral characteristic of entrepreneur. Alertness refers to an individual's propensity to formulate and image of the future (Kirzner, Discovery and the capitalist process, 1985, p. 56). This fits well

with visionary entrepreneurs like Steve Jobs and Bill Gates. This alertness of what's around the corner is required to face uncertainty that exists in the market.

Uncertainties results in errors on parts of players in the markets leading to disequilibrium in the system. Then an entrepreneur with alertness steps in to correct the disequilibrium, thereby restoring the equilibrium. Thus, entrepreneurship is a mechanism through which inefficiencies in an economy is discovered and mitigated (Kirzner, 1997).

Whereas Schumpeter's entrepreneur disrupts equilibrium by introducing radical innovation, Kirzner's entrepreneur, as mentioned earlier, begins in disequilibrium and corrects it (McMullen & Shepherd, 2006). Despite the difference, Kirzner himself acknowledged that his view and Schumpeter's views on entrepreneurship are not inconsistent with each other. He said that Schumpeter's psychological profile of an entrepreneur, and his portrayal of creative destruction as an essential feature of capitalism are valid and accurate (Kirzner, 1999, p. 16).

Other works

Casson (2000) posits that entrepreneurship can only be understood within a holistic view of the economy. In his entrepreneurial theory of the firm, information takes the center stage. He says:

> The entrepreneurial theory of the firm portrays the firm as an organization dedicated to the planning of markets. The firm's planning is based upon a synthesis of information. An initial synthesis of information improvised by its entrepreneurial founder is followed by recurrent syntheses effected more routinely by its managerial organization…. It is shown that entrepreneurship holds the key to the 'core competencies' of the firm, and that the appropriation of rents from entrepreneurial synthesis is crucial to every aspect of the strategy of the firm. (p. 5)

In an entrepreneurial theory of firm proposed by (Langlois, 2005) the firm exists as a solution to the coordination problem of in a world of change and uncertainty. In the same line, Sautet (2000) explains the emergence of new firms as ways to solve coordination problems. The firm, he says, can be seen as pulling together of entrepreneurial activities by a central entrepreneur. In these propositions, the essence is coordination and not ownership of the firm.

2.2 Evolutionary Theory and Entrepreneurship:

While the Austrian view seems to be concentrated in explaining the "why" behind entrepreneurship or the emergence of firm, the evolutionary theory serves to explain the "how" or the process of entrepreneurship. It forwards our understanding of the process and context of entrepreneurship.

By focusing on explaining the emergence of firms, the Austrian view seems to overlook the whole phenomenon of pre-birth stages and hence miss out on a big chunk of entrepreneurship process. With the development of the concept of nascent entrepreneurs, we observe that many would-be entrepreneurs never succeed in creating organizations. Furthermore, the evolutionary theory allows for decoupling of entrepreneurship and innovation and calls our attention to the numerically dominant role of reproducers, rather than innovators (Aldrich & Martinez, 2001).

Several authors like Aldrich (1999) and Nelson (1995) have adopted evolutionary approach to explain economic and organizational change. Aldrich (1999, p. 2) explains an evolutionary approach as "A generic framework for understanding social change. Applicable at multiple levels, it directs our attention to the processes of variation, selection, retention, and struggle that jointly produce patterned change in evolving systems." Nelson (1995) finds that the evolutionary theory is better in terms of corresponding to the actual complexities of the processes. However, he also admits that the relative novelty of formal evolutionary theory in economics means that the proponents of the theory are somewhat struggling with both techniques and standards. Hölzl (2005) identifies three distinguishing and interrelated traits of evolutionary economics as –

a) *Knowledge* and *practice* forming central ingredients of the approach of evolutionary economics. *Knowledge* is conceived as a set of *routines* that are reproduced through *practice*.

b) It takes a *population* approach instead of typological approach based on representative agents.

c) The interdependence between selection and development a first characteristic of evolutionary economics with competition serving as a selection process.

Following Darwin's theory of natural selection, the evolutionary theory posits that the organizations those adapt and fit the selection environment the best will survive and thrive while others will perish. This applies as much to the new firms, if not more, as to established firms. Hence the importance of the theory in explaining the entrepreneurial process is significant.

Aldrich and Martinez (2001) suggest that the evolutionary theory unites in a single coherent framework a concern for entrepreneurial outcomes and the processes and contexts making them possible, using the basic concepts of variation (creation of new organizational structures), adaptation (entrepreneurs utilizing their resources and modify organizations), selection (organizational modifications leading to survival) and retention (successful arrangements being imitated by other entrepreneurs) . Foss and Christensen (1996) liken the concept of more variations being favorable in evolutionary theory (increasing the probability of finding the 'optimum' type of variation) and Schumpeterian entrepreneurship (increasing the probability of making new combinations, leading to innovation).

Aldrich and Martinez (2001) also talk about the differences between "innovators" and "reproducers"[2]. While the latter tries to replicate the routines and competencies of existing successful firms, the former has significantly different routines and competencies. In this sense, my research questions 3 d. and 3 e. relate to innovators. I intend to study if these new routines and competencies are somehow designed to perform better in the macroeconomic environment the firms were founded in, and if these routines can be grafted in other firms through mergers and acquisitions.

There have been some models of entrepreneurial behaviors developed based on evolutionary theory. An example of such model was developed by Grebel et al. (2003) where they studied the birth process of firms and industries.

2.3 Ecological Perspectives:

Carroll and Khessina (2005, p. 1) define organizational ecology as the study of "populations of organizations, focusing on how they change over time, especially through demographic

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[2] These can perhaps be seen as equivalents to "innovators" and "creative imitators" used by Drucker.

processes of selective replacement–organizational founding, mortality, and growth." This theory basically compares the organizational population with the biological ecology. Noting that fact, Tan (1998, p. 1) stated "scholars have begun to apply the concepts, theories, methods, and models of scientific ecology to populations of organizations, leading to definitions of organizational species, niche, competition-mutualism, carrying capacity, birth and death, etc."

Like the evolutionary perspective, the ecological perspective serves to explain the process of organization creation and development. In particular, it is relevant in explaining the rates of organizational entry into organization population and their survival. Referring to this particular issue, Caroll and Khessina (2005) build a framework constituting three rates that can be explained by organizational ecology – a) *rate of founding attempts*, b) *rate of success in founding attempts* and c) *mortality rate in new organizations*. Thus, this seems to give a picture of both pre and post birth of firms. Also, organizational ecology is relevant in explaining the background conditions determine these three rates.

The ecological perspective to entrepreneurship focus on the environmental conditions that generate variations in the number of firms founded over time (Aldrich, 1990) There has been plenty of research done on the influence of environmental conditions at the time of organization founding in its survival and performance (Boeker, 1988) albeit not from ecological perspective. Despite its relevance, Carroll and Khessina (2005) note that entrepreneurship research has not used this particular perspective significantly. Their study of 43 articles published in the year 2003 in Journal of Business Venturing showed that only 2.7% of the citations in those articles referred to organizational ecology articles or books. The authors go on to explain various research avenues being pursued by organizational ecologists with regards to entrepreneurship like preproduction/initial organizing, origin of entrepreneurs (spin-offs), foundings by niche position within a population, identity space as a resource and social movement-like behavior.

There have been studies using this perspective to explain rise and fall of industries over time. One such study was done by Reuf (2004) where he explained the process of decline and resurgence in mature industries with reference to the evolution of US medical schools over several decades. He states that the ecological mechanisms that explicitly analyze population inertia or community ecology seem to be the most promising in terms of theoretical and empirical consistency.

The two general drawbacks of this perspective are: 1) the mother of this perspective, sociology, is not particularly concerned with applications and 2) the populations level analyses, which is characteristic of this field, may not always ben translated to individual level, where most entrepreneurial studies are (Carroll & Khessina, 2005). Despite these, given the background of my study, which is based in founding conditions (in terms of economic cycle), I believe that ecological perspective can shed important light into my research.

2.4 Resource based view

Resource based view is the theory explaining a firm's ability to gain sustainable competitive advantage (SCA) (Barney, 1991; Foss, 2011). It looks from factor market or resource perspective rather than product market perspective. As Foss (2011, p. 5) explains, "the RBV is characterized by tracing the potential to create and appropriate more value than the competition to the resource endowments of firms, and the characteristics of these resources". To assess what resources can generate SCA for firms, Barney (1991) suggested that they be subjected to the VRIO test where we gauge if the resource in question is valuable, rare, costly to imitate and organizationally embedded. The theory has been fine-tuned by introduction of some other elements such as resource accumulation within firm, strategic factor markets (where buyers have different expectations about the resources) and bargaining among resource owners (Foss, 2011).

Foss (2011, p. 15) spots multiple connections between RBV and entrepreneurship like "idiosyncrasy, tacit knowledge, uncertainty, dynamics, resource assembly and changes in resource base." Despite these apparent connections, Foss notes that research on entrepreneurship has not used RBV significantly but this is changing. A notable change seen is the emergence of *strategic entrepreneurship*, which tries to combine the opportunity seeking nature of entrepreneurship and advantage seeking nature of strategic management. However, this goes beyond the focus on start-ups and concentrates on established firm as a source of entrepreneurial actions. Thus, this particular approach cannot be taken as a comprehensive way of describing entrepreneurship.

A bigger contribution of RBV in entrepreneurship can stem from its ability to explain superior performance of some firms compared to others based on the differences in type,

magnitude and nature of resources available to firms. Having superior resources at the time of founding can give an entrepreneur more flexibility in terms of strategies he can choose and the scale of the firm he can start with. It has been shown in existing literature that the initial strategies (Carter, Williams, & Reynolds, 1997) and scale of the startup size (Gerosky, Mata, & Portugal, 2009) have long lasting impact on performance and survival of the firms. Thus, RBV can be thought of as a more effective theory to explain the performance differences as opposed to the previous theories (evolutionary and ecological), which seem to be limited to explaining survival of firms. One must note that, however, merely having superior resources does not guarantee superior performance if they are not translated into capabilities, which then will yield positive performance (Mahoney & Pandian, 1993).

Resource based view has been used to explain the entrepreneurial process/performance by several authors (Alvarez & Busenitz, 2001; Koret al., 2008; Farreira et al., 2011). Alvarez and Busenitz (2001, p. 77) use RBV to "show how entrepreneurship generally involves the founder's unique awareness of opportunities, the ability to acquire the resources needed to exploit the opportunity, and the organizational ability to recombine homogeneous inputs into heterogeneous outputs." Similarly, Farreira et al. (2011, p. 111) use "entrepreneurial orientation (intangible resource comprising of innovativeness, risk taking and proactiveness) as one important dimension of RBV and its impact in growth of small firms." They find that entrepreneur's resources, entrepreneur's network and firm resources were significantly related to growth of the firm.

2.5 Knowledge based view

The knowledge-based view (KBV) considers knowledge as the most significant strategic asset in a firm and the heterogeneous knowledge bases and capabilities among firms are the main determinants of sustained competitive advantage and superior corporate performance (Eisenhardt & Santos, 2006). The innovative economic environment, which characterizes most developed economies in the world, necessitate that the firms be viewed as processors of knowledge (Cohendet & Llerena, 2006). Knowledge encompasses various intangible resources present in an organization such as management capabilities and competences, technical knowledge or tacit organizational routines etc.

The Knowledge-based view is an extension of resource-based view of the firm (Curado, 2006). However, unlike the resource-based view, the knowledge-based view maintains that knowledge is qualitatively different input to firm's activities (Uygur & Marcoux, 2013). The KBV theorists posit that it is the most strategic resource of a firm while for RBV it is merely another generic resource.

Knowledge based view helps us explain some important aspects of entrepreneurial process. This is particularly true in the modern economies (especially western) where the economies are characterized by high knowledge intensity as mentioned earlier. It has been found that the proprietary knowledge assets claimed by an entrepreneurial firm is one of the most critical sources of competitive advantage and future profitability (Spender & Grant, 1996). Looking at this issue from the lens of opportunity vs. necessary entrepreneur, one can expect the former to be more likely to posses such knowledge (and hence they are able to see the opportunity to exploit such knowledge).

The view also posits that organizational learning plays an important role in the sustainability of competitive advantage (Fenwick, 2012). Thus, this could be used in explaining the treatment effect of firms that manage to survive.

Summary:

The various theories and perspectives have forwarded our understanding of entrepreneurship in different ways. While the Austrian view is focused on subjective side of entrepreneurship (as a function of human behavior under uncertainty) as opposed to "main-stream" theories that are more focused on the observable and measurable outcomes (like start-ups, self-employed individuals etc.). The evolutionary and ecological perspectives emphasize the role of environmental conditions in formation and survival of firms. Unfortunately, they only deal with population level analyses and hence their contribution in the field of entrepreneurship, which has predominantly used firm level analyses, has been less despite the apparent usefulness claimed by respective theorists. RBV is useful in mitigating that problem and it is useful tool in explaining the differences in performance among the new firms based on the resources possessed by them and their ability to translate them into capabilities. Finally, the KBV, which is seen by many as a natural extension of RBV, is better suited to explain the competitive advantages owed to knowledge assets which is very important in today's economies, western in particular, which are predominantly knowledge-based.

3. Research Questions

The main issue I am attempting to address in this thesis relates to the entrepreneurship emerging out of recession. In this context, I have divided the research question into three categories:

1. Entrepreneurs:
    a. What happens to Necessity vs. Opportunity entrepreneurs' composition in recession relative to normal times?
    b. How are the recession-entrepreneurs different from normal-times-entrepreneur in terms of: a) Risk preference, b) Personal Wealth, c) Education, d) Relevant industry experience e) Motivation?

2. Firms:
    a. How does the industry composition change in terms of firms established during recession relative to normal times?
    b. How is a firm founded during recession different from a firm founded in growth period with respect to firm level characteristics - a) Innovativeness, b) Efficiency and c) Cost structure d) Capital g) exit strategy?

3. Performance:
    a. How do the firms established during recession fare compared to those established during normal times with regards to survival and performance?
    b. After the crossover point, do recession born firms (that have passed the trial by fire) perform better financially than firms founded in normal times?
    c. Is the performance of firms founded in recession that have succeeded in obtaining external financing at the time of their founding better than firms founded in normal times?
    d. Do recession born firms fare better in future recessions than firms founded in normal times? (Draught resistant genes analogy – can the secrets (if there are any) of beating recession be found in the firms founded in recession?)
    e. How is the financial performance of firms formed by merger between firms founded in recession and boom (R+B) compared to those that are result of merger between two boom-born firms (B+B) and those that are result of merger between two recession-born firms (R+R)?

3.1 Entrepreneurs:

a. What happens to Necessity vs. Opportunity entrepreneurs' composition in recession relative to normal times?

There seems to have been limited work done in the change in composition of necessity vs. opportunity-based entrepreneurs in recessions. Recessions increase the number of necessity entrepreneurs and decrease the number of opportunity entrepreneurs (Thompson, 2011). This is line with findings of Block and Wagner (2006), Robichaud et al. (2006) and Wagner (2005), according to whom; a jobseeker will be positively impacted by his workless status in his decision to start a new venture. It is further reinforced by Thurik et al (2008). Thus, the composition of entrepreneurs changes in favor of necessity entrepreneurs during recessions. But, Deli (2011) does not find any robust evidence that necessity entrepreneurship is stimulated by increases in local unemployment rates. The small firm effect[3] has a greater impact on their self-employment transitions than local unemployment effect for low ability (<50 percentile) workers. But she also finds that opportunity entrepreneurship is stifled by large unemployment. Due to the severity of the recession, I believe that the great recession will give good indication of shift in composition. The mixed evidence leaves rooms for more study in the topic.

b. How are the recession-entrepreneurs different from normal-times-entrepreneur in terms of: a) Risk preference, b) Personal Wealth, c) Education, d) Relevant industry experience e) Exit strategy?

Regarding the characteristics of entrepreneurs, there has been limited study. Robichaud et al (2010) has studied the comparison of various personal characteristics of necessity vs. opportunity entrepreneurs and concludes that on average opportunity entrepreneurs are younger, more educated, better equipped vis-à-vis relevant skills, earn more business related income, and sees higher growth prospects compared to necessity entrepreneurs. Similarly, Bhola and Verheul (2006), Giacomin et al (2011) have studied the differences between opportunity and necessity entrepreneurs in terms of socio-demographics, attitudes and perception of 'obstacles'. Adana and Lusardi (2008) show that individual characteristics,

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[3] Small firm effect refers to the theory that smaller listed firms yield higher returns than larger listed firms even at similar risk levels.

such as gender, age, and status in the workforce, social networks, self-assessed skills, attitudes toward risk and reputation are important determinants of entrepreneurship. Likewise, Wagner (2005) has studied the difference in characteristics of nascent necessity vs. nascent opportunity entrepreneurs. While these works study the snap shot of entrepreneurship at a point in time, it would be interesting to see if those differences in characteristics of necessity or opportunity driven entrepreneurs would be amplified or dampened during recession compared to normal times.

3.2 Firms:

a. *How does the industry composition change in terms of firms established during recession relative to normal times?*

As in case of earlier research questions, there has been limited work done on this topic. Farlie (2013) found that the industry distribution of firms founded during the great recession was similar to those during the growth times. One would imagine that there would be increase in entrepreneurial activity in industries with relatively low entry barriers as necessity entrepreneurs, which increases during recession, would concentrate in those industries since they lack the human or financial capital to enter industries with high entry barriers as suggested by Bhola et al (2006).

b. *How is a firm founded during recession different from a firm founded in growth period with respect to firm level characteristics - a) Innovativeness, b) Efficiency and c) Cost structure d) ownership e) size, f) capital?*

There have been some cross sectional comparative studies regarding the characteristics of necessity vs. opportunity driven firms (Robichaud et al 2010, Giacomin 2012) but there is lack of literature in study of how these characteristics change in recession cohorts compared to growth cohorts.

With respect to innovation, Drucker (1985) posits that the most critical time for innovation is during economic turbulence. While on one hand a valid conjecture could be that only innovative business models receive financing during recessions thus increasing the average "innovativeness" of the recession cohort; on another hand, it is more likely that an opportunity driven entrepreneur would come up with an innovative business model

(Robichaud, 2010) and since they are less compelled to start a business in recession than necessity driven entrepreneur (and will more likely wait for better climate (Farlie, 2010)), innovativeness could be diluted in the recession cohort relative to growth cohort. Koillinger & Thurik (2012) posit that more imitative as well as user entrepreneurship takes place during recession as opportunity costs are low then. Innovation could be in product and services or in processes (leading to changes in efficiency or cost structure).

With respect to ownership, due to constrained financing, one could expect increase in multiple owners firms compared to firms founded in normal times. This could be manifested in opportunity entrepreneurship than necessity entrepreneurship since one would expect the former to be more ambitious in nature. Also, firms founded by necessity entrepreneurs are found to be smaller than those by opportunity entrepreneurs. If necessity driven entrepreneurship increases during recession, along with constrained finances, one would expect the recession born firms to be smaller in general. Hvide and Moen (2007) found a strong positive relationship between founders' prior wealth and start-up size.

3.3 Performance:

a. *How do the firms established during recession fare compared to those established during normal times with regards to survival and performance?*

While the performance of firms founded during recession per say have been studied in limited amount, there have been plenty of studies (for e.g. Stinchcombe, 1965; Boeker, 1989; Gerosky, Mata & Portugal 2009) that suggest that the founding conditions leave long lasting impressions on firms and hence determine their fate in terms of survival and performance to a large extent. In the same vein, some authors (for e.g. Carter, Williams, and Reynolds 1997; Child, 1972; Shrader and Simon, 1997; Weick, 1979) have argued that the strategic choices that firms can make in course of their life can be limited by the conditions at the time of their market entry. Gerosky, Mata and Portugal (2009) show that at least in the first few years of entry, the founding conditions have more profound effects than current conditions although those effects are not permanent. From motivation (necessity vs. opportunity) perspective, the increase in proportion of necessity entrepreneurs during recession could dilute the performance measures of the cohort.

In contrasts to these studies predicting inferior performance of firms founded in adverse

conditions like recession, Swaminathan (1996) posits that firms born during adverse conditions are put through a "trial by fire" in which significant number of firms fail and die but those which survive have a better prospect in a long term due to two reasons: a) they are the fittest firms and b) there is a population level learning among the surviving firms. These two reasons correspond to the selection effect, where only fit firms are selected for success, and treatment effect, where through learning, even relatively unfit firms can develop. In a study, Stangler (2009) found that well over half of 2009 Fortune 500 companies in and 2008 Inc. list (fastest growing) were formed during recession or bear market. This implies that growth rate do not appear to have a negative impact on business performance. Thus there seems to be some contradictions in the existing literature. The recent great recession provides an excellent backdrop in order to study the comparative performance of these firms vis-à-vis growth era firms.

b. *After the crossover point, do recession born firms (that have passed the trial by fire) perform better financially than firms founded in normal times?*

As referred earlier, Swaminathan (1996) suggested that after crossover point (the end of trial by fire), the remaining firms of cohort of firms founded in adverse conditions would perform better than other firms because a) they are the fittest firms and b) there is a population level learning among the surviving firms. There have been studies done on how long the effects of founding conditions last (Gerosky et al, 2008, Eisenhardt & Scoonhoven, 1990). Once the firms have sailed safely through the most harmful effects of those founding conditions, they are adjudged to have passed the trial by fire and crossover point. This question has not been so far answered in existing literature.

c. *Is the performance of firms founded in recession that have succeeded in obtaining external financing at the time of their founding better than firms founded in normal times?*

As observed by Lerner (2010), the great recession has had dramatic effect on the financing of innovation, whether through venture capital, initial public offerings, or corporate venturing. In moments of such scarcity, one would assume that only the best ideas would receive external financing. Thus these firms that have passed the screening tests from these cautious investors would be expected to perform not only better than other firms founded during recession, but also better than their counterparts founded in growth times as less

superior ideas can get funding during growth times.

d. *Do recession born firms fare better in future recessions than firms founded in normal times? (Draught resistant genes analogy – can the secrets (if there are any) of beating recession be found in the firms founded in recession?)*

There have been studies that suggest that organizations are imprinted by the environment at the time of founding in a manner, which impacts their subsequent development and performance (Boeker 1989; Stinchcombe 1965). Internally oriented models such as the strategic choice perspective imply that the primary locus of organizational choice exists in the selection of goals and domain, with the most consequential act of domain selection being performed at the time of founding (Carter, Williams, and Reynolds 1997; Child 1972; Shrader and Simon 1997; Weick 1979, Thomas & McDougall, 1999). The firms founded during recession (and thus have imprints of recession) that have passed the trial by fire as referred by Swaminathan (1996) can be thought of as firms that have learned to ride recession. Studying the performance of firms founded multiple recessions ago, we could see if this assumption holds.

If indeed the firms founded during recession are found to be systematically better at coping with recessions, then we could perhaps draw an analogy of draught resistant genes that could have been developed within these firms. I believe it would be a very interesting finding. However, identifying such genes could be quite a challenge. The evolutionary approach takes routines to be equivalent of genes in organizations. But in young firms, it is likely that distinct routines may not be present. There could be causal ambiguity then with regards to these firms' superior performance in recessions. However, one could take a relatively mature firm with well-developed routines and trace its performance all the way down to its early life. Meticulously factoring for age effects, it may be possible to prove this "recession-proof gene" hypothesis. I realize this is a long shot, but shot worth taking nonetheless!

e. *How is the financial performance of firms that are result of merger between firms founded in recession and boom (R+B) compared to those that are result of merger between firms founded in boom (B+B) and those that are result of merger between firms founded in recession (R+R)?*

The essence of this question is related to previous questions. If indeed the firms referred to in question (3 d) have the recession resistant genes, would the firms that acquire these recession

resistant firms be able to acquire those genes and fare better in subsequent recession?

It would be intriguing to assess the performance difference between firms with respect to different combinations of business cycles in which their parent firms[4] were formed. To the best of my knowledge this question has not been looked at in literature so far. If something of significance comes from this study then it will have implications for M&A strategy of firms. I expect the transfer of these genes to be transferred from acquirer to the acquiree or from the bigger/powerful firm to the smaller in case of mergers since the key strategic decisions will be made at the top.

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[4] Parent firms in the sense that the firm in question is a result of M&A between these firms.

4. Variables and Measurement Approach

4.1 The Entrepreneurs.

The first part of the thesis is to try and understand who are the entrepreneurs who found firms during recession. In this context, we focus on differences between entrepreneurs who found firms during recession and those who found firms during normal times with respect to such traits as motivation, risk preference, personal wealth, education, relevant industry experience and exit strategy.

Existing literature has studied entrepreneurial motivation from different points of view. Although broadly similar, different authors have used different classifications to identify entrepreneurial motivations. For example, the concepts of push and pull factors motivating an individual to be engaged in entrepreneurial activity is quite popular (Johnson & Darnell, 1976; Hakim, 1989; Harrison & Hart, 1983; McClelland *et al*, 2005; Schjoedt & Shaver, 2007). Factors such as independence, money, challenge, opportunity and lifestyles are considered pull factors while factors such as job dissatisfaction, lack of employment opportunity or family conditions are considered push factors (Kirkwood, 2009).

Henrekson (2004) classifies entrepreneurial motivations into three categories – 1) first best (driven by factors such as opportunity and independence), 2) second best (driven by factors such as necessity, job dissatisfaction etc.) and 3) Rent seeking (driven by incentives such as tax breaks and subsidies, which, perhaps, can be considered opportunity of some sort).

The concepts (perhaps) most widely used today is the dichotomy of necessity and opportunity entrepreneurship. The terms necessity and opportunity entrepreneurships were first used in the GEM[5] reports of 2002. Since then, this dichotomy has caught a lot of attention in the field of entrepreneurship. (Reynolds et al, 2002; Thompson, 2011; Bhola *et al*, 2006; Giacomin *et al*, 2011; Poschke, 2010; Deli, 2011; Robichaud *et al*, 2010; Farlie, 2011 etc.). According to Reynolds *et al*. (2002), it is possible to label more than 97 percent of those who are entrepreneurially active as either opportunity or necessity entrepreneurs

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[5] See Table 4 in appendix for information about GEM (Global Entrepreneurship Monitor)

(Bhola *et al*, 2006). The recent works (for example (Giacomin, 2012)) have suggested that the necessity-opportunity dichotomy is quite simplistic and needs improvements. He argues that the same motivation can be interpreted as either a necessity or an opportunity one depending on the contextual situation of the entrepreneur. Nevertheless, this framework should be very handy for us in knowing better the entrepreneurs that found firms during recession.

The above-discussed three ways of explaining motivations of entrepreneurship seem quite compatible with each other though. Henrekson's first and second-degree entrepreneurship fits the definition of opportunity and necessity entrepreneurship respectively and the third degree, as mentioned earlier, can be thought of exploiting some sort of opportunity. The necessity entrepreneurs are "pushed" into entrepreneurship through the mismatch between the current and intended situation and hence are said to be acting on *push motivation*. Similarly, the opportunity entrepreneurs are *pulled* by the opportunity they think exists in the market for their product or service and hence are said to be acting on *pull motivation* (Giacomin *et al.*, 2011). The difference between the push-pull notion and necessity-opportunity notion is that the former requires that opportunity be present no matter if the individual is pushed to or pulled by it (Solymossy, 2005).

1. *What happens to Necessity vs. Opportunity entrepreneurs' composition in recession relative to normal times?*

<u>Implicit variables</u>: Proportion of Necessity Entrepreneurs vs. Opportunity Entrepreneurs.

4.1.1 Necessity & Opportunity entrepreneurs (%)

Individuals who have chosen to participate in entrepreneurial activity because all other employment options are either absent or unsatisfactory are considered necessity entrepreneurs. Individuals who have chosen to participate in entrepreneurial activity in order to exploit a perceived business opportunity are considered opportunity entrepreneurs (GEM, 2005).

Measurement Approach:

The idea is to compare the proportion of necessity entrepreneurs and opportunity entrepreneurs in recession vs. growth period. So panel study of entrepreneurs with respect to

their motivations will be done for entrepreneurs founding firms between year 2005 and 2009. The first two years of the period represents growth while the last year represents recession. I intend to study the question with both secondary and primary data.

There are multiple sources of secondary data that can be used based on the measurement approach. One such reliable source is the micro data from Global Entrepreneurship Monitor (GEM). GEM, which is a multinational initiative, involves a comprehensive, longitudinal, empirical analysis of the entrepreneurial activities in various countries (Robichaud et al, 2010). It classifies entrepreneurship based on various factors, motivation being one of them. Their measure of opportunity entrepreneurs includes only those who are pulled to entrepreneurship by opportunity and because they desire independence or to increase their income, not those who are pushed to entrepreneurship out of necessity or those who sought only to maintain their income. A sample of GEM's questionnaire has been provided in table 5 in appendix. Only the entrepreneurs selecting option 1 (to take advantage of business opportunity) shall be considered opportunity entrepreneurs and all other shall be considered necessity entrepreneurs. A considerable number of studies on necessity-opportunity entrepreneurship have been based on the GEM database (Poschke, 2010; Robichaud et al, 2010; Wennekers et al, 2005; Bergmann & Sternberg, 2007). I shall use the Norwegian segment of GEM micro data from specified period.

Some authors have chosen to use other proxies rather than the blunt question asked by GEM in its questionnaire for necessity-opportunity dichotomy. For example, Block and Wagner (2010) used the way of termination in previous employment as a proxy for necessity or opportunity entrepreneurship. If the individual had left his/her job at his/her will and started a new business then he/she was considered an opportunity entrepreneur. Those who were self-employed or started a new business because they were dismissed or their previous workplace closed were categorized as necessity entrepreneurs. For this, they used German Socio-economic Panel Study data, which has comprehensive information on occupational backgrounds, among other things, of a large population sample in Germany.

Challenges

1. Davidsson and Wiklund (2001) suggest that studies done on retrospective events such as entrepreneurship are likely to be subjected to memory decay, (memory) hindsight bias and rationalization after the fact. Thus, the data from the primary survey could be polluted by the entrepreneur forgetting some key facts or the information they have at

hand may induce them to rationalize their decisions they took in past. Memory biases result in the subjects giving information that is different from the actual event that took place. While the objective variables such as education or industry experience does not suffer from these problems as they are documented, variables such as motivation (necessity or opportunity based) can be affected. The subjects may also misreport their past choices to be more consistent with their present choices. For example, a necessity entrepreneur whose firm is currently performing good may say that he always knew this was going to be the case and he saw the opportunity in the first place. *These kind of challenges tilt the balance in favor of using secondary data whenever possible*.

2. As pointed out by Bergmann & Sternberg (2007), some entrepreneurs may hesitate to admit that they became entrepreneurs out of necessity. To mitigate this, they consider all entrepreneurs as necessity unless they explicitly state, "to take advantage of business opportunity" as the reason for starting a business.

3. Non Response Bias: The study has two issues with response patterns. First if there is significant difference between necessity and opportunity entrepreneurs in terms of proportion responding in the primary research, that may hamper us from having a clear pattern. This could probably be examined by comparing "first wave" and "last wave" (obtained after reminders for example) (Manimala, 2009). Perhaps, one could imagine that subsequent wave of response *upon providing some incentive* will increase the number of opportunity entrepreneurs (?). Alternatively, as Robichaud *et al* (2010) did, we could drop the participant who cannot be reached after two attempts and replace them with similar candidates from general population.

Second, and perhaps more important issues is if the response bias changes in recession compared to the economic growth cohorts. The lack of such bias will in fact mitigate the first issue to a large extent since the constant biases will mean that the net effect will be negligible.

The availability of comprehensive microdata in Norway makes it possible for us to perhaps use the registry information about the respondents and non respondents and assess if there is any systematic difference.

Some of the earlier studies done in similar topics have hinted at difficulty in assessing sample specific bias given that they were not able to account for the self-employed individuals due to lack of reliable data source. This could mean that necessity entrepreneurs were underrepresented in the studies since they are more likely to be self-employed (without

incorporating a firm), given their relative lack of human and financial capital (Giacomin, 2012; Caliendo & Kritikos, 2009). Luckily, in Norway information about the self-employed individuals can also be found in the same source as incorporated firms thus adding more robustness to the study.

2. *How are the recession-entrepreneurs different from normal-times-entrepreneur in terms of: a) Risk preference, b) Personal Wealth, c) Education, d) Relevant industry experience e) Exit strategy f) propensity for innovation?*

<u>Implicit Variables</u>: Risk preference, Personal wealth, Education, Relevant industry experience, Exit strategy, Propensity for innovation

The idea here is to understand "who" these individuals are that start business during recession with respect to some cognitive and socio-demographic factors they represent.

4.1.2 Risk preference

Risk preference is defined as one's tendency to choose a risky option (such as an investment that has equal chances to yield a 20 percent return or a 0 percent return), or a safe option of an equal or lower expected value (such as an investment with a guaranteed return of 5 percent). Liles (1974) suggested that in becoming an entrepreneur, and individual risks financial well-being, career opportunities, family relations, and psychic well-being.

Measurement Approach

Existing literature measures entrepreneurs' risk preferences or propensity to take risk using various proxies - from health related activities like smoking and using seat belts (Hersch & Viscusi, 1990) to stock market participation and personal leverage (Hvide & Panos, Risk Tolerance and Entrepreneurship, 2013). Others like Brockhaus (1980) have used the Kogan–Wallach Choice-Dilemma Questionnaire (CDQ, Kogan & Wallach, 1964) and yet others have used the risk taking scale in Jackson Personality Inventory. The results regarding the linkage of risk taking behavior and entrepreneurial attitude has been mixed and seems to differ based on proxies used. While Brockhauls (1980) using CDQ found no significant difference in risk taking propensity, Stewart and Roth (2001) using JPI found that entrepreneurs are indeed more risk taking than managers. Tyszkaa *et al*, 2011 studied risk preference of entrepreneurs (divided into opportunity and necessity) compared to wage earners and found no relationship between significant difference. They used questionnaires

with questions pertaining to self-reported risky financial behaviours and a quiz vs. sure payment option to assess risk preference of entrepreneurs and wage earners.

I intend to conduct a study using a questionnaire (like the risk taking subscale of JPI) structured to assess the propensity of the entrepreneurs to take risk. Since we are more interested in comparasion of recession-born entrepreneurs with their counterparts in growth times, perhaps we could expect that the tool-related biases will be cancelled out and some sort of trend can be seen if it exists.

Challenges

As described earlier, finding the right tool to assess risk preferences of the subjects seems to be the biggest challenge. Determining the most appropriate proxies or best possible questionnaire is essential. The tools will be pre-tested for effectiveness, including response rates, before sending them out.

4.1.3 Personal wealth

This attribute measures the wealth that the entrepreneur has which may be considered to be at his/her disposal to backup the entrepreneurship should that be needed. Especially during the times when external finances are constrained (during recession for example) one would think that individuals with more personal wealth will find it easy to realize their entrepreneurial endeavors. Wealth plays the role of collateral and limits default (Paulson *et al* , 2006). A symptom of financial constraints is that wealth will be positively correlated with the probability of starting a business, with the characteristics of potential entrepreneurs held constant (ibid). There, however, have been mixed results in existing literature about it.

Measurement Approach

There have been some important studies done to assess the link between liquidity constraint and entrepreneurship (Evans & Jovanovic, 1989; Holtz-Eakin, Joulfaian, & H.S., 1994; Paulson *et al* , 2006; Hvide & Moen, 2007). These studies, in one form or other, take into account the personal (or family) wealth of the entrepreneur taken from various surveys. Personal wealth is quite a sensitive information and hence is quite difficult to find comprehensive data source. Out of these studies, study on the Norwegian data by Hvide & Moen (2007) can be considered to have an edge given the fact that earnings and wealth figures are public information in Norway and hence is largely devoid of the bias of non-

response. They used the data on individuals prepared by Statistics Norway, which has comprehensive socio-demographic information such as gender, age, education, wealth, interest payments, and earnings split into labour income and capital income. They use two measures of wealth – net wealth (gross wealth – debt) and net capital income (gross income – interest expenses). With this richness of data at disposal, I intend to study it to see if there is a difference in composition of entrepreneurs with respect to personal wealth at different phases of economic cycle, recession vs. growth period in particular.

However, just looking at the personal wealth may not give a complete picture. For example, an individual with a net worth of NOK 10 million can be considered well endowed for a business startup of NOK 5 million, for example, but he/she is financially constrained (internally) if the startup is NOK 20 million. Thus, it is more meaningful to look at personal wealth in relation to the size of the firm they found. This has been followed by Ivans & Jovanovic (1989) as well as Hvide & Moen (2007) in their studies. Based on existing literature, an entrepreneur is said to be financially constrained if the ratio of his business size to personal net worth is 1.5 to 2 (Hvide & Moen, 2007). I believe it would be interesting to see how these multiples change in recession cohort relative to growth cohort and within these cohorts, in opportunity entrepreneurs and necessity entrepreneurs.

Furthermore, I intend to study the composition in different types of industries. I expect the effects to be different in industries with respect to capital intensity. So I will choose a capital-intensive industry, one labor-intensive industry and another mixed.

Challenges

As stated earlier, the biggest challenge in studies related to sensitive information like personal wealth, is the availability of data. This is mitigated to a large extent in Norway because of the transparency on personal wealth resulting in availability of rich data.

4.1.4 Education

By education, here, I am referring to the schooling background of the entrepreneur. The meta-analytic study of relationship between education and entrepreneurship selection by Sluis and Praag (2008) concluded that there is neither positive nor negative relationship. But interestingly, they find that "college dropout" shows significant positive coefficient in 42% of the cases studied and "post graduate training" in 52% of the cases. The first could be

either because the individuals drop out of college deliberately to start a business (as opportunity entrepreneurs) or and those who drop out for other reasons are forced to start a business because they have a lower chance of finding jobs (as necessity entrepreneurs).

Lucas (1978), through his model, suggested that education helps instill managerial capabilities in individuals making them more likely to me entrepreneurs. Le (1999), however, suggest that education has conflicting effect on entrepreneurship selection as it, on one hand, gives managerial capabilities that favours entrepreneurship but, on the other hand, it also increases opportunities outside probably making the opportunity cost of entrepreneurship higher and thus dissuading individuals from being entrepreneurs. These conflicting findings make it even more interesting to see how the composition with respect to education differs in recession and growth cohorts.

Measurement Approach

Sluis and Praag (2008) find that there have been different proxies for education used in existing literature with "years of education" as the only continuous measure available and other being dummy variables like "college graduate" or "high school graduate". As indicated earlier, the choice of measuring rod in this case (as in years of education vs. college dropout or post graduate training) would dictate the result. I intend to use both continuous (years of education) and dummy (high school graduate, college graduate, postgraduate) and see how the composition differs in recession and growth cohorts. While the continuous measure will make the results comparable with those done in places with different educational system, the dummy measurement will help identify changes in blocks.

I shall utilize the secondary data for this study. In Norway there are comprehensive information on socio-demographic attributes of individuals collected by authorities like *Tax registry* or *Education registry* or Statistics Norway as mentioned earlier. Data from these sources help mitigate non-response bias.

Challenges

As shown by Sluis and Praag (2008), the effect of education on entrepreneurship selection also depends on country with higher probability of college graduates choosing entrepreneurship in the USA than elsewhere. Thus the study conducted in Norway may not have universal validity.

4.1.5 Relevant Industry Experience

Here I am trying to compare the composition of entrepreneurs with relevant industry experience during recession and growth period and how this composition changes with respect to necessity and opportunity entrepreneurship. There have been quite a few studies done that associate prior relevant industry experience of entrepreneurs with the success of their entrepreneurial endeavors (Barringer et al, 2005; Fesser & Willard, 1990; Siegel et al, 1993). This is most likely because, as Barringer et al (2005) summed up, the relevant industry experience gives entrepreneurs the professional network, and marketing and management expertise that helps them compensate for the liability of newness.

It is plausible to believe so because severe recessions like the one we recently experienced forces some businesses to shut down and others to layoff and significant number of employees[6]. Some of these laid off individuals could turn out to be entrepreneurs (perhaps mostly by necessity). However, on the other hand, during growth periods, individuals with relevant industry experience may see opportunities that others don't and set out on a business venture (as opportunity entrepreneurs). Cassar (2012) finds that entrepreneurs with some industry experience are 16 percentage points less likely to start a business that did not meet their expectations than those without industry experience, which indicates that they are more likely to be opportunity entrepreneurs. It is likely that we see more opportunity entrepreneurs with industry experience in the growth cohort and more necessity entrepreneurs with industry experience in recession cohort.

Measurement Approach

There are sources of employment history of individuals in Norway like employment registry but this would limit our assessment when it comes to individuals who worked in a firm that operated in multiple segments. Comparing the secondary SIC codes of firms individual has previously worked for with the code of his/her own firm can help us mitigate the problem to a large extent. Primary data through survey seems more appropriate for measurement of this variable. However, employing data from both sources would serve as a means of cross checking the results and hence, I plan to go with both. I plan to measure the industry

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[6] For example, from December 2007 to June 2010, over eight million jobs were lost in the US (Daily Finance, 2010).

experience as both continuous (number of years of experience) and dummy variable (1 if more than 1 year of industry experience and 0 if otherwise).

Challenge

As mentioned earlier, the challenge here lies mainly in getting accurate data from secondary source in case of individuals with employment history in firms operating in multiple segments. And, with primary survey come the usual challenges of response bias.

4.1.6 Exit strategy

DeTienne (2010, p. 212) describes entrepreneurial exit as "the process by which the founders of privately held firms leave the firm they helped to create; thereby removing themselves, in varying degree, from the primary ownership and decision-making structure of the firm." There has been relatively less work done in this particular field of entrepreneurship and among the studies that have been done, most focus on firms as unit of analysis rather than entrepreneurs (ibid). DeTienne (2010) suggests that development of exit strategy during the conception or gestation phase of entrepreneurship depends on motivation of the entrepreneur in starting the firm in the first place. He suggests that the small business founders (who see their new venture as an extension of their personality) tend to not have an exit strategy while the "entrepreneurial founders" driven by growth or profit motivation tend to have one in place. Throwing in the notion of necessity and opportunity entrepreneurship in this equation makes the question more interesting. One would imaging, following DeTeinne's argument, that opportunity entrepreneurs are more likely to have exit strategy. Perhaps since the opportunity entrepreneurs have a better haunch about what value their business can yield in future.

It seems that two opposing forces act in case of necessity entrepreneurs with respect to exit strategy. On one hand, necessity entrepreneurs can be expected to cling more onto their businesses even when businesses perform poorly since they are less likely to have better options. On the other hand, entrepreneurship is not their passion and hence one would imagine that they might be willing to leave their venture if appropriate job is offered to them.

Having or not having an exit strategy can have a long lasting effect on the firm since, following work of authors (for e.g. (Carter et al, 1997; Child, 1972; Shrader & Simon, 1997;

Weick, 1979) who have argued that the strategic choices firms can make in course of their life can be limited by the conditions at the time of their market entry.

Measurement Approach

It would be very difficult to find this information in public domain or in already available surveys. Hence, conducting a survey on my own would probably be the only (and appropriate) option to see what composition of entrepreneurs in growth vs. recession time have exit strategy and what are those exit strategies (IPO, M&A, sales, liquidation). The survey will have information on whether the entrepreneur is necessity or opportunity to see how the existence of exit strategy varies based on motivation behind entrepreneurship.

Challenges

Non-response bias

4.2 The Firm

The second part of the Thesis concerns the Firms that are started during recession and their comparison with respect to those started during growth times. Here, we are basically interested in the industry composition of these recession cohorts and their firm level characteristics such as a) Innovativeness, b) Efficiency and c) Cost structure (Lien, 2010) d) ownership e) size (employees and capital) that make them different from growth cohort.

3. *How does the industry composition change in terms of firms established during recession relative to normal times?*

4.2.1 Industry composition

Market entry depends on many factors like industry concentration, industry growth, entry barriers, market size, supply of entrepreneurs, macroeconomic conditions etc. Market entry during recession can be not just because of necessity, but also because recession presents some opportunities as Ilmakunnas & Topi (1996, p. 11) argue "a recession provides potential entrepreneurs with new opportunities, like lower labor and equipment costs or attractive niches created by earlier business failures or withdrawals of multiproduct enterprises from less profitable activities."

It is plausible to think that entrepreneurs are attracted towards industries with higher profits and/or that are growing. So, for entrepreneurs who start firms during recession, anti-cyclical industries could be lucrative. Lien (2010) has shown that not all industries are equally affected by recessions. These differences can be expected to play a role in determining the entry rates in respective industries.

With higher financial constraints during recession, there is reason to believe that entering into certain industries may be more difficult than others. I believe the answer to this question will be, in part, intricately linked to the answer for the first question i.e. the nature/motivation of entrepreneurs during recession vis-à-vis normal times. If, for example, there is significant increase in number of necessity entrepreneurs during recession, then their limited financial and human capacity (Block & Wagner, 2010) will limit their choice of industries to enter into. Bhola et al (2006) suggest that it is more likely that necessity entrepreneurs choose to become active in sectors that are more or less likely to be characterized by entry barriers although they could not address this issue due to lack of data. With higher supply of labor (resulting from high unemployment) and constrained financial resources, one may expect the industry composition in terms of new entries skewed towards less capital intensive and high labor/knowledge intensive.

Thus, this question relates to industry specific entry rates and the characteristics of those industries that affect the entries. For this, I follow the work of Ilmakunnas and Topi (1996) and Aghoin et al, 2007 and use following industry characteristics: a) profitability, b) ratio of median firm size to market size (sales) and median number of employees as a proxy for natural entry barrier c) five-firm concentration ratio/Herfindahl index as a proxy for strategic entry barrier. In addition, I will add d) knowledge intensity[7] and e) cyclicality of the industry as well.

Measurement approach

The data on entry will be obtained from Brønnøysundregistrene (The Register of Business Enterprises), which is an authority responsible for registering all Norwegian and foreign business enterprises in Norway. As in earlier questions, I will use data from 2005 to 2009

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[7] Knowledge intensity is defined as the extent to which an industry produces or employs high-technology products or utilizes skilled or educated workforce.

representing both growth and recession period. Industries shall be identified using primary SIC codes. The measure of entry rate will be the ratio of total number of firms that enter in a particular year in the industry to the total number of firms in that industry at the beginning of the year.

This database will also be used to calculate the industry characteristics – profitability (ROA), ratio of median size to market size based on sales, and concentration ratio. Knowledge intensity can be measured through different proxies, for example, R&D expenditure as percentage of value added in each industry and the ratio of college graduates to total employees (Horrace et al, 2006). The former method is more suitable for manufacturing industry while the latter for service industry. The C-5 ratio is the market share of five largest firms in the industry. Concentration ratio through Herfindahl index is measured as the sum of squares of fifty largest firms in an industry. The higher it is, the more concentrated is the industry. Cyclicality of the industry will be measured by aggregate sales growth (or decline) over a period encompassing both growth and recession phases.

Challenges

While getting standard data like size or sales or computing ratios like ROA or determining cyclicality should be fairly easy, accurately gauging knowledge intensity can be tricky. As argued by Autio et al, (2000), measuring knowledge intensity through R&D expenditures can have some drawbacks, especially in small firms where it is difficulat to assess R&D expenditures.

4. *How is a firm founded during recession different from a firm founded in growth period with respect to firm level characteristics - a) Innovativeness, b) Efficiency and c) Cost structure d) ownership e) size, f) capital?*

As posited by several authors (Carter et al, 1997; Child, 1972; Shrader & Simon, 1997; Weick, 1979), the strategic choices made by firms at the period of its birth make a lasting impression throughout its life. Further, many authors (Boeker, 1989; Romanelli, 1989; Gerosky et al (2009); Stinchcombe, 1965) have suggested that the conditions during which firms are created leave imprints on the organization that can last for a long time. Following these arguments, we may expect the firms created during recession to be different from those created during growth periods. To see if that is true, we shall assess these two cohorts based on several firm level characteristics.

4.2.2 Innovativeness

Following the definition of innovation by OECD (2005), we may say that innovativeness of a firm is its ability to implement a new or significantly improved product (good or service), a process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.

Conventional wisdom suggests that access to adequate capital will help finance innoation and hence, we may argue that the firms born in the affluence of economic growth are more likely to be innovative than their recession countrparts. Lack of capital access during recession, especially for entrepreneurs, can be seen from the decline in activity of venture capitalists in the downturns. To put things into perspective, funding for start-ups fell 50% in the first quarter of 2009 from the year earlier, a level not seen since 1998 (Los Angeles TImes, 2009). In contrary to this conventional wisdom, Katila and Shane (2005), who studied the environmental conditions under which new firms' lack of resources alternately promotes or constrains innovation, found no link between access to capital (through venture capitalists) and new firm innovations. Following this, one may expect to see not much difference in innovativeness of firms founded during recession compared to those founded during growth times. However, the authors themselves have identified some limitations of study (one of them being that small firms may be funded by other sources of capital like government grants and not just by venture capitalists) and the findings from this study should provide an interesting read.

Measurement approach

Denti (2013) has summarized various measures of innovation used in existing literature which includes a) product/technology measures (new products or product improvements, patents or patent applications, patent citations, process innovations) b) financial/market measures (ratio of sales of new products to total sales, ratio of sales of new products to R&D expenditures, R&D expenditures, number of employees in R&D) and c) subjective measures (innovative work behaviour, team innovativeness, organizational innovation). There are pros and cons to each of these indicators. Katila and Shane (2005) measured innovation by two outcomes the likelihood that a licensee would sell a product developed from a licensed invention (*first sale*), and the likelihood that a licensee would abandon a license to that invention prior to any sale (*license abandonment*). McKelvie (2007) used Expected Innovative Output (expected number of innovations to be launched over the coming 12

months) and Actual Innovative Output (actual number of innovations launched over the year).

Although the innovativeness of the entrepreneur may not always be translated into the innovativeness of firms, I conjecture that the latter stems from the former. The fact that the firm is the brain-child of the entrepreneur and he/she (perhaps) remains as highest authority in terms of decision making makes the innovativeness of entrepreneur a good proxy for innovativeness of the firm. So, measuring the innovativness of entrepreneur through Jackson Innovation Scale (JIS) would be a good idea too. Hyrsky & Tuunanen (1999) used JIS to assess innovativeness of Finnish and American entrepreneurs in their comparative study. A sample of JSI is given in Appendix.

I intend to use one indicator from each of three categories listed by Denti (2013).

   a) New products or product improvements (number of prototypes released per year)
   b) Revenue from new products to R&D expenditure
   c) Organizational innovation (through questionnaire as done by Chen et al (2006) as shown in appendix)

Challenges

It is quite challenging to measure the innovativeness of new firms since the most variables used as proxies are more difficult to measure in new firms than mature firms. For example, due to the lack of proper segregation of departments in new firms, assessing funds allocated for R&D are difficult to accurately measure. However, using three different measures and aggregating them, I expect to find a more balanced measure than picking one over other.

4.2.3 Efficiency

Organizational efficiency is the measure of organizational input (resources) and organizational output (goods and services provided). I intend to measure the following measures of efficiency of firms a) revenue per employee b) revenue per unit of operating expense c) revenue per unit of capital expenditure.

Measurement approach

The variables required for computing the ratios mentioned above are – number of employees in each firm, revenue of each firm, operating expenses and capital expenses. These figures

are can be (and I intend to) collect from annual reports of firms or in databases like Orbis (a database from Bureau Van Dijk), which provides comprehensive data of companies around the world including Norway.

4.2.4 Cost structure

By cost structure, I am referring to the ratio of fixed to variable costs. Variabilizing cost structure (i.e. making cost structure heavy on variable costs) gives firms agility by linking costs to revenue, which, in effect, reduces cost risk (Vanarse & Shivram, 2013). This is also supported by (Katayama & Bennett, 1999) who argue that reducing proportion of fixed cost in the cost structure will help firms adapt better to conditions when demands are falling. The financial constraints during recession could force firms founded during that time to variabilize their cost structure due to lack of capital upfront to pay for fixed assets. For example, while a firm founded during growth time could probably muster finances to buy servers, a firm founded during recession would be forced to go for cloud computing. Following this logic, I expect cost structure of recession born firms to be more inclined towards variable costs.

Measurement approach

From the financial statements of firms, the variable and fixed costs will be extracted and the ratio is compared between the recession and growth cohorts.

4.2.5 Ownership

I am interested in the average number of owners per firm founded in different phases of the business cycle. With financial constraints in recession it is likely that entrepreneurs are forced to join hands to get the business started. The size of the founding team is important since, as shown by Eisenhardt & Schoonhoven (1990), the size and collective experience of founding team has a positive impact on the growth of the firm.

Alongside, I will look at the ownership from the point of nationality of entrepreneurs too. Whether or not the compositions of ownership with respect to Norwegians vs. foreign owners change in recesison compared to economic-growth will be interesting.

Measurement Approach

Data on ownership of firms along with other details for firms registered in Norway can be found at Brønnøysundregistrene (The Register of Business Enterprises) which has information on personal identification number of the founders, total capitalization of the company, and portion of the firm owned by each founder.

4.2.6 Size

I will measure the size of firms in terms of number of employees and capital. Hvide and Moen (2007), among others, found that financial constraints disable entrepreneurs from establishing firms in optimum scale or minimum efficient scale. This will have important implications for the survival (Gerosky et al, 2009) and long term performance of the firm (Hvide & Moen, 2007).

Measurement Approach

Finding the number of employees in each firm can be a difficult to find in readily available databases of concerned authorities, hence I will have to depend on annual report of the firm. It will give me necessary information on capital too, the structure of which, one would imagine, would be inclined towards more equity and less debt for recession born-firms and opposite for growth-born firms in relative terms. Further, these two figures will enable me to calculate capital intensity of the firm.

4.3 The Performance

The third and final part of the Thesis concerns the performance of firms started during recession vis-à-vis those founded during growth times. As has been referred to in earlier parts, several authors have emphasized the importance of founding conditions on survival and performance of firms in long run (Romanelli, 1989; Geroskyet al, 2009; Stinchcombe, 1965; Dahlqvist et al, 2000, Eisenhardt & Schoonhoven, 1990).

5. *How do the firms established during recession fare compared to those established during normal times with regards to survival and performance?*

6. *After the crossover point, do recession born firms (that have passed the trial by fire) perform better financially than firms founded in normal times?*

7. *Is the performance of firms founded in recession that have succeeded in obtaining external financing at the time of their founding better than firms founded in normal times?*

8. *Do recession born firms fare better in future recessions than firms founded in normal times? (Draught resistant genes analogy – can the secrets (if there are any) of beating recession be found in the firms founded in recession?)*

9. *How is the financial performance of firms that are result of merger between firms founded in recession and boom (R+B) compared to those that are result of merger between firms founded in boom (B+B) and those that are result of merger between firms founded in recession (R+R)?*

Implicit variables: Firm death, revenue growth rate, asset growth rate, and profit margin.

4.3.1 Survival, death and crossover point

For this paper, I will assume the firms that stop to report to the appropriate authority like tax office (where they are supposed to report every year) for two consecutive years as death or discontinuation of the firm as missing data on one year could be due to delay or some other reasons. This approach was also employed by Gerosky et al (2009).

Measurement approach

I will obtain the required data to study birth and death of firms from the tax office where the firms are supposed to report each year since their formation. So the first year the firms show up in the records will be treated as their birth year. The data will be tested for two years prior to the first year of study to make sure they are new firms. Although other authors (Romanelli, 1989, for example) have used year of start of formal operations and not the year of incorporation as the firm's birth year for similar study, this would be difficult to identify in the kind of database I have chosen to work on.

The data from recent recession could perhaps be too soon for this research so I will be working on the survival of firms founded during the dot com bust in 2000 and the subsequent growth period. The reason being the fact that emperically the firms surviving beyond 3.5 years are expected to persist thereafter (Reynolds, et al., 2005) and to spot discontinuation of most firms founded during the 2009 recession, I need data from 2015 (3.5

years plus 2 years). The data up to 2013, in that sense should be adequate to address firms founded in the growth period leading to 2007 and recession before that.

To make sense of how survival differed based in industry sectors, two digis SIC codes will be used to group the firms.

Crossover point, coined by Swaminathan (1996) is the number of years after which most of unfit firms have been shaken out and the population of cohort has fairly stabilized. I expect this to be industry specific and hence will determine separately for different industries under study. Perhaps, the 3.5 years of firm's age, after which GEM considers the firms to persist, could serve as an indicator of the crossover point.

Challenge

There are two challenges here:

- The main challenge in this part of the study is to determine the reason for discontinuation. Since discontinuation of firm probably does not always mean failure, in case of firm being acquired for example could mean success (Freeman et al, 1983), treating it as firm's inability to survive may be perhaps misleading. Although this should be a fairly small number[8], one way to address this issue will be to identify firms that were founded in the study period and have been acquired since then (through databases like Zephyr, for example) and exclude them from the study.
- Censored data: The data on survival of firms is right censored which means that we do not know for how long the firms will survive beyond the time period of our study. For example, a firm founded in 2009 that exists today may or may not survive in say 2014, thus making the estimate of its survival probabilities more challenging. Fortunately, the use of semi-parametric hazard model addresses that issue as discussed later in the paper.

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[8] Gerosky et al (2009) in their study of Portuguese firms found that only 1% of firm discontinuation was caused by M&A.

4.3.2 Performance measures

Previous studies have used metrics like sales growth (Eisenhardt & Schoonhoven, Organizational Growth: Linking Founding Team, Strategy, Environment and Growth among U.S. Semiconductor Ventures, 1978-1988, 1990), employee growth (Cooper et al, 1994) and profitability metrices like gross profit margin (Wiklund, 1999). The latter, used a multi-faceted performance measure consisting of four growth and three profitability indicators.

Measuring growth as a suitable indicator of performance for new ventures is popular because it is argued that growth is a more accurate and easily accessible performance indicator than accounting measures (Wiklund, 1999). But, different indicators reveal different facts about firms, so measuring performance based on both growth and profitability indicators gives a clearer picture. Apart from these, I believe that asset growth will show impact of financial constraints reflected during recessions and will correlate with change in cost structure if it indeed exists. Based on these arguments, I shall be using sales growth, employment growth, asset growth and gross profit margin[9].

Merely comparing the performance indicators of firms established in recession and growth times will not be fair unless accounted for industry performance. Hence, each of these indicators will be industry adjusted. Data shall be obtained from secondary source such as Dun & Bradstreet's database of accounting figures based on the annual financial statements reported by the companies.

For questions 8 and 9, I will need to study firms founded in earlier recessions perhaps the recessions in 1988, which, apparently, was also triggered by banking crisis. Studying the aforementioned variables of the firms founded during that recession over the subsequent recessions. Their performance of this recession cohort in relation to growth cohort during recession will serve to verify Swaminathan's (1996) trial-by-fire model. Further, this will, in conjunction with firm-level characteristics addressed in second part, will help to shed light into the question – if recession-born firms are better at navigating through recession than firms born during normal times.

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[9] Profit margin, being size neutral, is a better indicator than profit, which is likely to be leveraged by sales volume giving bias in favor of larger firms (Wiklund, 1999).

For the last question, a database like Zephyr specializing in merger and acquisitions will be required. The firs step is to list the transactions that occurred since 1990 in Norway. I selected this large sample because with the conditions that these firms have to fulfill to answer these questions, the final list will be still relatively small. The second step is to sort out the transactions based on the birth period (recession vs. growth) of either firm. That will leave us with three cohorts – firms formed from two recession-born firms, firms formed from two growth-period-born firms and firms formed from combination of recession-born and growth-period-born firms. For firms that have merged multiple times, all involved firms (in all transactions throughout the period) will be considered to segregate.

Control variables

These questions require meticulous control of firm size, firm age and industry as we are studing firm with different sizes, founded at different times and belonging to different industries.

Challenge

Especially for the final two question, I imagine that getting adequate sample size will be challenging since they deal with very specific firms. Inadequate amount of sample may limit the generalizability of findings.

5. Research Design & Statistical Approach

My research design for the research questions shall be based on the critical studies done by several authors on entrepreneurial research. I intend to address the shortcomings seen in existing studies to make sure that my study is robust. In this section I analyze the general shortcomings in past entrepreneurial research, based on some meta-analytical studies (Low & MacMillan, 1988; Mullen, Budeva, & Doney, 2009; Ireland, Webb, & Coombs, 2005 etc.) and my approach to address those shortcomings. These thorough studies will help me ensure proper and strong research design.

The dynamic nature of entrepreneurship makes it difficult and imperative at the same time to make research design strong. As Ireland et al. (2005) stated, entrepreneurship scholars committed to designing and executing solid empirical work face methodological challenges. Entrepreneurship research has often been found wanting when it comes to strong theoretical and methodological basis (Cooper A. , 2003).

One of the mostly cited papers highlighting the limitations of entrepreneurship research is (Low & MacMillan, 1988) where they called for multi-level analysis, longer time frames and exploring causality rather than developing exploratory case studies (Manimala, 2009). In another study, (Chandler & Lyon, 2001) found progress in entrepreneurship research through use of more sophisticated models leading to higher reliability and greater validity, but they also indicated need for using multiple sources of data, ensuring validity and reliability, sophisticated theoretical models and data analysis and greater use of longitudinal studies. Yet another meta-analytical study done by Mullen et al. (2009) found that less than half of their sample studies had done reliability checks and less than 40 percent had done validity checks. Interestingly, the research in this field has been found to be different in Europe and the USA in terms of methodologies used (Leitão, Lasch, & Thurik, 2011).

Now I will discuss individual topics in research design and the challenges:

5.1 Sampling

My approach will be characterized by triangulation of data from registry sources and data from survey I will be conducting. This will serve as a cross validation measure too. The sampling issues raised here are more critical to the questions using primarily the survey data.

5.1.1 Sampling design

Mostly, studies in entrepreneurship focus on data obtained through surveys (Chandler & Lyon, 2001). The unique nature of entrepreneurship means that sample sizes are smaller in entrepreneurship compared to strategic management research (Ireland, Webb, & Coombs, 2005). Between the probability sampling (random and stratified sampling for example) and non-probability sampling (judgment sampling for example), each has its own benefits and disadvantages. The former, for example, avoids systematic errors (ibid) and the results are more likely to be generally valid while the latter offers high response rates and participation levels but the results may not be generalized (Coviello & Jones, 2004). The variables in my survey[10] will be subject to probability sampling (simple random sampling of firms that meet the sample criteria mentioned below).

5.1.2 Sample criteria:

The sample criteria for the survey will be limited to the profit-oriented firms established during the study period (2005 to 2009) that are registered in appropriate authority in Norway.

There are certain industries in Norway, as in any other country, where government intervenes. So in these industries the market mechanisms are not allowed to decide the fate of the firms. These industries include agriculture, fisheries, upstream oil and gas industry and financial industries. These interventions are manifested as subsidies in some industries and some peculiar regulations in the other. I shall exclude these industries from my analysis.

5.1.3 Sample size:

Sample size is often crucial in empirical studies because too small samples cannot avoid Type II error i.e. failing to reject false null hypothesis while too big samples give rise to non-sampling errors and non-consequential results become statistically significant (and may lead to Type I error or rejecting a true null hypothesis) (Manimala, 2009). The study of 665 papers by (Mullen, Budeva, & Doney, 2009) found that the average sample sizes for primary

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[10] The practicalities of the survey are discussed in coming section.

Also, I shall be studying entire population through secondary dataset for most variables.

data were 314, 351 and 610 for *Journal of Small Business Management, Journal of Business Venturing and Entrepreneurship Theory* and *Practice* respectively. Accounting for the fact that response rates may be modest, I intend to cast a wider net and try to reach as many firms/entrepreneurs as possible with an approximate sample size of 500 in mind.

5.1.4 Validity assessment:

Issues such as non-respondent bias and self-selection bias are important to evaluate with the intent of establishing acceptable levels of validity (Ireland, Webb, & Coombs, 2005). Selection bias may creep into the study when one group of sample is systematically lost which could be a case in questions such as the motive behind starting a firm (necessity vs. opportunity) where only the entrepreneurs "explicitly" indicating that they became entrepreneurs to exploit an opportunity will be recognized as opportunity entrepreneurs. Similar case occurred in study by Bhola et al. (2006). In that study, the authors used Likelihood Ratio test to see if their data suffered from selection bias. I intend to follow the footsteps to check for such bias. As far as non-respondent bias is concerned, looking at the ratio of different groups in different waves of responses and checking for significant differences is a good way to detect a bias.

As discussed in the earlier section, there is a possibility of memory bias (memory distortion, hindsight bias etc.) in the survey data. Thankfully, in most cases where secondary data are available, I can use them to cross verify. Creative use of proxies in secondary data is required when direct observable variables are not available.

5.2 Measurement:

As stated by (Chandler & Lyon, 2001), the heavy reliance of entrepreneurship research on survey data makes it imperative that construct measurement be very robust. There are various kinds of validity measures to make sure that the construct is robust and results are generally valid. Discussed below are some of the important ones raised in the meta-analytical studies cited above:

5.2.1 Convergent validity

Convergent validity is the degree to which the scales correlate with other measures designed to measure similar constructs. Using other statistical techniques such as confirmatory factor analysis is imperative to ensure robustness of the construct being used. In confirmatory factor analysis, one tests hypotheses corresponding to prior theoretical notions, which can include the number and nature of factors, but can include much more complex hypotheses, such as the equality of factor pattern matrices across populations (USF.edu, 2013). It is a popular method for cross validation of construct. In confirmatory factor analysis, one needs to choose items with factors loading[11] of more than 0.5 (Manimala, 2009). Ireland et al. (2005) found evidence of such cross validation technique where one study had split it's the sample and performed confirmatory analysis on the each sample to ensure validity.

Yet another means of validating the reliability is using secondary data to cross-validate the survey data, which is very relevant in my study given the rich micro data available in Norway, which can be used to cross-validate my survey data. These validation measures will help me ensure convergent validity.

The *reliability* or *internal consistency* is often measured through Cronbach alpha[12] (Manimala, 2009). Constructs with alphas of more than 0.70 are considered to be highly reliable. Chandler & Lyon (2001) found that around 29 percent of the entrepreneurial research they assessed had alphas less than 0.70.

5.2.2 Discriminant validity

On contrast to convergent validity, the discriminant validity illustrates if the measures that are supposed to be unrelated are indeed unrelated. In other words, it shows the degree to which scales do not correlate with dissimilar measures. It is necessary for showing that the construct is unique and captures some aspect of the phenomenon that other measures do not

[11] Correlation coefficient between the factor (linear combinations of variables) and variables.

[12] It is most commonly used when you have multiple Likert questions in a survey/questionnaire that form a scale, and you wish to determine if the scale is reliable.

(Manimala, 2009). I intend to provide evidence of discriminant validity to illustrate robustness of my constructs.

5.2.3 Nomological validity

In this type of validity assessment, one sees the extent to which constructs are inter-related as expected by the theory and make sense to a logical observer (Manimala, 2009).

5.2.4 Face validity

In this measure of validity, one sees the extent to which the meanings of items appear to be valid to a layperson (Manimala, 2009). In other words, it shows if the questionnaire used to measure a certain variable will in fact measure that variable. It is especially important in measuring variables like personality traits (risk preference for example). A pilot test of the survey material before sending it out to actual respondents will help assess the face validity of my survey tools.

5.2.5 External validity

Along with aforementioned construct validities, I also intend to illustrate the external validity of the constructs. External validity concerns the applicability of the results from a study done on a sample on general population i.e. whether or not the results of study done on a sample is also valid outside that sample. Following (Busenitz, Gomez, & Spencer, 2000). I intend to measure external validity through ANOVA tests. ANOVA (Analysis of Variance) is a statistical technique for comparing means of multiple independent populations. ANOVA puts all the data into one number (F) and gives us one P for the null hypothesis (csbsju.edu, 2013).

$$F = \frac{Between - groups\ variance}{Within - groups\ variance} = \frac{Mean\ square_{between}}{Mean\ square_{within}}$$

where:

$$Mean\ square_{between} = \frac{Sum\ of\ squares_{between}}{degrees\ of\ freedom_{between}}$$

$$Mean\ square_{within} = \frac{Sum\ of\ squares_{within}}{degrees\ of\ freedom_{within}}$$

If the null hypothesis is true, there should be no difference between the population means and the ratio must be close to 1 (Cooper & Schindler, 2006, p. 494)

5.2.6 Time frame

As mentioned earlier, the lack of longitudinal studies has been long seen as impediment to much progress in entrepreneurship research Ireland et al. (2005). My study includes significant focus on longitudinal data, especially in addressing questions related to survival and performance of new firms.

5.2.7 Effect sizes

Effect size shows the degree to which the dependent variables reflect influences from independent variables. As Ireland et al. (2005, p. 132) put "The dichotomous approach (i.e., reject or fail to reject the null hypothesis) of NHST[13] allows one to only speculate about the relationships in the overall population. However, this conjecture is not grounded in the statistical process, nor does NHST provide any information on what the magnitude of the conjecture is. In other words, NHST fails to support even weak theory." Effect size tells the magnitude of the effect and as stated by Rosnow & Rosenthal (1989), effect size tells what is practically significant as opposed to p[14] value which only shows statistical significance.

There are different ways of calculating effect size. One of such measures is *Cohen's d*. Essentially; *Cohen's d* is the standardized mean difference between the two groups.

$$d = \frac{M_1 - M_2}{S}$$

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[13] Null Hypothesis Significance Testing

[14] *P* value is the probability quantifying the strength of evidence against the null hypothesis. A small p-value indicates weak evidence against null hypothesis while high p-value indicates strong evidence against the null hypothesis.

Where M_1 and M_2 are means of the two groups and S is the pooled standard deviation[15]. The effect size is considered small if d ≤ 0.2, medium if 0.2 ≤ d ≤ 0.5 and high if d > 0.5 (Becker, 2000).

Another way of measuring effect size is through correlational approach as the point-bi-serial correlation[16] between the dichotomous independent variable and the continuous dependent variable. It can be calculated from Cohen's d as (Becker, 2000):

$$r_{Y\lambda} = \frac{d}{\sqrt{(d^2 + 4)}}$$

Given the importance placed by various authors that studied entrepreneurship research, I will place high emphasis in reporting effect sizes of the variables.

Special attention

Keeping in mind that the secondary data (like the ones from GEM for example), may also suffer from the biases that characterize data from primary surveys. Hence addressing those issues through same validation mechanisms mentioned above is important.

5.3 Analysis Techniques

In this section, I try to analyze how the variables might be related to each other in terms of analytical techniques that may be used in the study.

Cooper and Schindler (2006, p. 546) give a list of various common multivariate techniques depending on the prior prediction of dependence of variables and nature of measure (metric or non-metric)[17]. If, for example, criterion (dependent variables) and predictor (independent variables) exist in the research question, then techniques such as multiple regression, multivariate analysis of variance (MANOVA) and discriminant analysis are preferable. On

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[15] The pooled standard deviation is found as the root mean square of the two standard deviations.

[16] Point bi-serial correlation is the correlation when one variable is dichotomous with an underlying normal distribution.

[17] Metric refers to ratio and interval measurements and non-metric refers to ordinal or nominal data.

the other hand, if the variables are inter-related without designating one as dependent and other as independent, the techniques such as factor analysis, cluster analysis, and multidimensional scaling are preferable. Thus, use of particular analytical tool depends on the nature of variables and the kind of data we are dealing with.

Types of data

Again, following Cooper and Schindler, data can be classified into four types – nominal, ordinal, interval and ratio. ***Nominal*** data classifies variables into mutually exclusive and collectively exhaustive categories. They don't have order, distance of natural origin, e.g. gender. ***Ordinal*** data classifies the variables into categories with order, but no distance or natural origin, e.g. questions answered through Lickert scale. ***Interval*** data classifies variables into categories that have order and distance but no natural origin, e.g. personal wealth. Finally, ***ratio*** classifies variables into categories with order, distance, and natural origin, e.g. age. Classification of the various variables I will be using in my survey, into these four categories are shown in Table 9. The options are shown in Figure 3 in the appendix. However, I shall discuss the most frequently used tools in the next segment which will be followed by the usage of those variables in existing literature and finally my choice of analytical tools.

5.3.2 Most frequently used analytical tools[18]

Multiple Regression

Multiple regression is probably one of the most frequently used technique in any statistical analysis. It is basically used in three types of situations:

- To find relationships between several independent (or predictor) variables and a dependent (or criterion) variable, thus, enabling us predict the latter with the help of former.
- When we have to control for the confounding variables to better estimate the effect of relevant variables.
- When we have to test and explain causal theories (through *path analysis*).

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[18] Based on Cooper & Schindler (2006) unless otherwise stated.

A generalized multiple regression equation is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \varepsilon$$

Where β_0 is a constant, β_1 is the slope of regression surface and ε is an error term

Discriminant Analysis

Discriminant analysis helps us classify data into two (dichotomous) or more (polychotomous) categories. Here the dependent variable has to be nominal while the independent variable can be interval or ratio-scaled. For example when we have to categorize entrepreneurs into necessity vs. opportunity entrepreneurs (which is a dichotomous, nominal dependent variable) based on education (which is ratio), we can use this technique.

A discrimination function is first estimated and is used to classify observations. The function looks like this:

$$D_i = d_0 + d_1 X_1 + d_2 X_2 + \cdots + d_p X_p$$

Where D_i is the score on discriminant function i, d_i's are weighting coefficients and X's are the discriminating variables. For more than two categories, we need *n-1* equations, where n is the number of categories. Note the linear nature of equation.

Logit (and Probit) Equation

Logit regression (logit) analysis is a uni/multivariate technique which allows for estimating the probability that an event occurs or not, by predicting a binary dependent outcome from a set of independent variables (Vasisht, 2013). A general logit regression looks like this:

$$logit(p) = \beta_0 + \beta_1 X_1$$

Where *p* is the probability of the event (say an individual being opportunity entrepreneur), X_1 is the explanatory variable (say education level of the entrepreneur). The parameters β_0 and β_1 are estimated using maximum likelihood (ML) estimation. ML uses the smallest possible deviance between the observed and predicted values through calculus to estimate the parameters. β_1, in essence, is the change in log odds of the event occurring for every unit change in the exploratory variable.

Note that, here, the log of the probability is linearly related to the independent variable, not the probability itself. This sets the logit model different from discriminant analysis where linearity between the variables is assumed.

Logit and Probit models are slightly different in the sense that the former uses cumulative logistic function while the latter uses normal cumulative distribution function. But qualitatively both models give similar results (Vasisht, 2013). Logit curves have slightly flatter tails than Probit curves (ibid).

Factor Analysis

Factor analysis represents a variety of techniques, which are basically principled around bundling together a number of variables that have overlapping measurement characteristics and thereby reducing the number of variables to a more manageable number. The most commonly used technique for this is *principal component analysis*. The idea is to bring together the correlating variables and bundle them into a composite variable resulting in a set of composite variables (or principal components) that do not correlate with each other. The resulting linear combinations are called *factors*. The best combination makes up the first principal component and is the first factor. The second principal component then explains the variance not accounted for by the first factor. There could be many such factors explaining the variances not accounted for by the factor ahead of them.

Although factor analysis is mostly used for exploratory analysis, to detect patterns in latent variables and discover new concepts, it can also be used to test hypotheses with confirmatory models as touched upon in "*Convergent validity*" section earlier.

Semi-parametric Hazard Model (for survival)

A semi-parametric model combines a parametric form for some component of the data generating process (usually the behavioral relationship between dependent and explanatory variable) with weak non-parametric restrictions on the remainder of the model (usually the distribution of unobservable errors) (Powell, 1994). The semi-parametric hazard model I am interested in is the Cox model.

The Cox model, which uses a proportional hazards specification, is quite a popular model in survival analysis and has been used in multiple fields of studies (Fan & Jiang, 2009). The model is quite general makes no assumption about the distribution of the survival times,

which is because it uses partial likelihood method (unlike the maximum likelihood we referred to in logit model).

A general specification of a semi-parametric proportional hazard model can look like this (Gerosky, Mata, & Portugal, 2009):

$$\log \mathrm{h}(t|x) = \lambda_t + \beta x_t$$

Where the left hand side represents the hazard rate (say the probability of firm exit at time t), λ_t is the baseline hazard function (yearly exit rate for a firm whose x = 0) and β is a vector of regression coefficients.

Structural Equation Modeling

Structural equation modeling (SEM) implies a structure for the covariances between observed variables, and hence it is sometimes called covariance structure modeling. In SEM, interest usually focuses on latent constructs - abstract psychological variables like "intelligence" or "attitude toward the brand" - rather than on the manifest variables used to measure these constructs (Rigdon, 2013). This technique incorporates and integrates path analysis and factor analysis. LISREL is the most commonly used computer program for SEM.

SEM has some significant advantages over other multivariate techniques. One of the advantages is that multiple and interrelated dependence relationships can be estimated simultaneously. Also, it can represent unobserved concepts (through latent variables) and account for measurement errors. Misspecifications in regressions can lead to errors of interpretation but the SEM strategy of comparing alternative models to assess relative model fit makes it more robust (Garson, 2012).

Cooper and Schindler suggest following five basic steps to be used in SEM:

1. Specification of the model's parameters as free or fixed: Fixed parameters have values set by the researchers, and are not estimated by data. If there is not hypothesized relationship between variables, the parameter is fixed at zero.
2. Estimations of free parameters from the data through methods like maximum likelihood estimations.

3. Evaluation of whether or not the model passes the goodness-of-fit test. If it does, then the next step would be to analyze and interpret the path coefficients in the model.

4. Re-specification of the model in case the test in step 3 shows a poor fit. The parameters that were fixed in the first step are freed and vice-versa.

5. Finally the results are interpreted and communicated. The results are usually presented in the form of path diagrams in which the ellipses represent latent variables, rectangles represent observed variables, straight arrows represent direction of prediction and curved arrows represent correlation.

5.3.3 Use of analytical technique in related studies

The various studies I have cited in previous sections have used different types of techniques in their analysis. A meta-analytical study by (Sluis & Praag, 2008) on impact of formal schooling on entrepreneurship selection and performance found that almost half of the 299 studies analyzed had used probit[19] models on panel data, 37% had used probit models on cross-sectional data and 10% had used multinomial logit models. Hvide and Panos (2013), in their study of relationship between risk tolerance and entrepreneurship also used logit model. Deli (2011), in her study of the effect of local unemployment and small firm effect on entrepreneurship used logistic regression. It is quite clear from these observations that the authors have historically preferred logit/probit analysis when the dependent variable in question is dichotomous.

Bhola et al., (2006) and Grilo & Thurik (2005) have used multinomial logit models[20] in their study of engagement levels (entrepreneurial involvement) of opportunity and necessity entrepreneurs. Cooper et al., (1994), in their study of initial human and financial capital as predictors of venture performance, also used the multinomial logit model. Gerosky, Mata, & Portugal, (2009) have used semiparametric hazard model (regression) to study the effect of founding conditions on survival of firms in Portugal. (Audretsch & Mahmood, 1994) used

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[19] The authors categorized logit, probit and linear probability models as "probit" as they are easily interchangeable.

[20] Multinomial logit models are used to model polytomous response variables and a set of regressor variables (So & Kuhfeld, 1995).

similar technique to estimate the hazard rate confronting new firms and plants in US manufacturing.

When it comes to performance measures, most of the authors seem to prefer multiple regressions. Bamford et al. (1999) used multiple regressions to see the effect of founding conditions and decision on performance of new bank start ups in the US. Eisenhardt & Schoonhoven (1990), who studied the the link between founding team, strategy, environment and growth in US semiconductor ventures, have used multiple methods like regression, event-history analysis and pooled cross-section analysis) citing lack of one ideal technique.

Use of structured equation modeling is also observed in entrepreneurial studies. Lee and Tsang (2001), in their study of the effect of entrepreneurial personality, background and network activities in venture growth, used structural equation modelling technique – partial least squares (PLS) – is used to estimate a path model with latent variables. Similarly, Karimi et al. (2012) used SEM to test the causal relationships between entrepreneurial characteristics and entrepreneurial intentions.

5.3.4 Tools most appropriate for this study

Having various types of research question, I believe that there is no "one technique fit for all" as pointed out by Eisenhardt & Schoonhoven (1990). Hence, it will be wise to follow the best technique that suits the research question and variables in hand. For example, the questions in my first sections which relates to the various characteristics of entrepreneurs and their implication on those entrepreneurs being necessity/opportunity entrepreneurs (dichotomous dependent variable) will be better answered through **logit/probit model** as has been proved by being the preference of overwhelming proportion of authors in past studies. While the discriminant analysis can also answer questions that are in the domain of logit models, the latter have some advantages over the former. For example, logit regression has fewer assumptions than discriminant analysis. Unlike discriminant analysis, logit regression does not require the independent variable to be normally distributed, linearly related or have equal variance within each group (Tabachnick & Fidell, 1996, p. 575). The assumption regarding linearity is of significant importance here in tilting balance towards logit models given the evidence of nonlinearity between some variables I will be working with (for

example individual's wealth and his/her propensity to be an entrepreneur as shown by Hurst & Annamaria; 2004)[21].

Similarly, the question regarding the survival rate of the firms (in recession and growth times), although can be answered using the logit/probit model given the dichotomous nature of variable (survival vs. death), I believe that it will be better addressed by the **semiparametric hazard model** (Cox's used by Gerosky, Mata, & Portugal (2009) as their model) better accomodates the problem such as right censoring that is evident in these data. As stated by Gerosky et al. (2009, p. 519), "this methodology enables us to study how the exit rates evolve over time and the way in which such rates are affected by both firm and sectoral characteristics, as well as by the macroeconomic environment." The model is used in a variety of fields such as biology ((survival time), engineering (failure time), medicine (treatment effects or the efficacy of drugs), quality control (lifetime of component), credit risk modeling in finance (default time of a firm) (Fan & Jiang, 2009), and as already mentioned, in the entrepreneurial field to determine the survival of new ventures. This acceptance in multiple fields speaks for the reliability of the technique.

Finally, **structural equation modeling**, which is a powerful altrnative to many multivariate techniques, will be one of the focal techniques I will use. The advantages of the technique has already been identified in earlier section. Given the complexities in relationships among various variables seen in past studies, SEM is an ideal tool to cut through those complexities. The flexible assumptions on which the modeling is based that allows interpretation despite multicollinearity; use of confirmatory factor analysis to reduce measurement error by having multiple indicators per latent variable and the ability to model error terms (Garson, 2012) make it a handy tool in a complicated research like mine.

5.4 Practicalities of the survey

Following Cooper & Schindler (2006), I intend to run a pilot test the survey first to see how effect it is and make necessary adjustments before sending it out to actual respondents.

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[21] However, other authors like Farlie and Krashinsky (2005) found strong linear relationship between asset wealth and propensity to be self-employed.

A random sample will be selected from the list of firms founded in each year from 2005 to 2009. The respective owners will be identified and communicated regarding the survey. Those who are reluctant to cooperate shall be removed from the list and new firms shall be added in the list. Test for selection bias should be done to ensure that, for example, its not systematically either necessity or opportunity entrepreneurs who are reluctant to cooperate.

As with any surveys, having a good response rate is a challenge. Bartholomew and Smith (2006), found an average response rate of 27% upon assessment of 154 studies published in two small business journals from 1998 to 2004. Since the targets of these studies were mostly the new and small businesses, I expect similar response rate on my survey. Hence, to get 500 responses that I indicated in earlier section, I need to send nearly 2,000 surveys out.

Phil et al. (2002) studied the influence of various factors in increasing response rate in postal surveys and had some interesting suggestions. Important factors they found and their effects are given in table 9 in appendix.

Some of these findings are quite interesting like the color of envelope and ink. But if that is what it takes to increase the response rate, the so be it! I intend to take these things into consideration as much as possible while sending the questionnaires. For example, assuring them to send the findings of my research and its implications for their firm would serve as a non-monetary incentive although the delayed nature of it makes it not very tempting.

I intend to send a concise cover letter explaining why the study is important to the firm and society in general through policy implications although the study referred above found that such appeal makes no difference. I will try to make the questionnaire look attractive and structure the questions in interesting ways. Social networks play an important role in increasing the response rates (Bartholomew & Smith, 2006). Hence, channels such as NHH alumni or CEMS alumni wherever applicable will be employed to ensure better response rates. The surveys will be either sent electronically or in mail based on the preferences of the respondent.

6. Significance

The research questions I have raised in this paper have significance for various parties. I will broadly divide them into three categories – a) policy makers b) entrepreneurs, businesses and investors c) Entrepreneurial literature

6.1 Significance for policy makers

The relationship between recession and entrepreneurship should be of great interest to the policy makers. Entrepreneurs have been long considered the agents of change and economic development since Schumpeter popularized these views. They are one of the important the drivers of growth. Hence it makes a lot of sense to view them as an outlet towards growth from recession. Thus, promoting entrepreneurship should be high in the agenda of governments seeking growth. Having said that, the policy makers need more precise directions to target their efforts if promoting entrepreneurship were to be an effective instrument in defeating recession. This is where my research questions come into play.

My research question tries to identify the individuals who are more likely to be entrepreneurs during recession with regards to their motivation and other characteristics. The policy makers can tailor make the entrepreneurship-spurring programs based on the specific requirements these categories of entrepreneurs. For example, if indeed the proportion of necessity entrepreneurs increase during recession and, in general, they lack human capital in comparision to opportunity entrepreneurs, then the government can introduce program that will help them bridge that gap to an extent (alongside the financial assistance which is common) or make the financial support contingent on a certain level of specific human capital (Block & Wagner, 2010).

Similarly, the question regarding the industry composition (relative entries rates in different indistries) will help policy makers focus on industries that attract more entrepreneurs during recession in the short term.

6.2 Significance for entrepreneurs, businesses and investors

The essence of my study is to assess how the firms founded during recession fare compared to those founded during economic growth and what are the underlying causes behind the differences if there is any. Thus, for any **entrepreneur** that has started his/her firm during recession, or the one who will start one during future recessions will be able to use my findings and address the vital issues that could be lead to their survival or death during the gestation period of the firm formation since the previous studies have indicated it to be a period, the decisions made in which will have long lasting impact. For example, if the survival of the firm is a function of its innovativeness, then the recessionary entrepreneur can emphasize (if he/she can) on that particular area. The findings in my study with respect to differences in traits and characteristics of opportunity and necessity characteristics and how it translates into firm level characteristics and eventually performance can serve as a guideline for both categories to learn from.

My question relating to the performance of recession born firms in future recessions will help entrepreneurs as well as existing **businesses** identify "genes" in the firm that can lead to protections during recessions. This would be significant for firms founded in recession (to protect those "genes") and those founded during economic growth (to acquire those "genes"). The question regarding if such genes can be acquired (through M&A) is implicit in the last research question. If these questions reveal interesting information, this could be significant in shaping the M&A strategies of businesses because then the founding conditions of firm would be put in the equation while deciding which firm to acquire or merge with.

Finally, the study will also be significant to the **investors**. Most investors prefer (or are forced by constraints) to remain dormant during recession or bear markets. My study will help them better identify the types of startups that are likely to go all the way and give them good returns. The investors will be able to identify the entrepreneurs as well as the firms that are likely to do good in the future based on their characteristics.

6.3 Significance for Entrepreneurial literature

As referred to the earlier sections of this paper, there have not been enough studies in this particular field. Even among the existing studies, consensus is rare. It is difficult to find comprehensive studies done that deals with the complicated interplay between recessions, entrepreneurship and the fate of those startups founded during recessions. In a preliminary study in similar domain, Kedrosky (2008, p. 4) says, " the relationship between when a company is founded and its eventual success is little-explored, but interesting and important…there is much more work that could be done"

My research questions are divided into three sections. The first section is about the entrepreneurs of recession, second section is about the firms founded by these entrepreneurs and the third is the performance of these firms. While overwhelming majority of similar studies focus on task environments (e.g. market size, concentration etc.) and control for economic environment, my study will give opposite perspective. I believe that these three sections, when combined together, will give a bigger picture of the interaction between recession and entrepreneurship.

The availability of rich personal level data in Norway, and the use of robust analytical techniques should add to the quality of studies done in the field. Several meta-analytical studies in the past, as referenced in earlier sections, critique the field for lacking studies with longitudinal data. This study addresses that particular issue. Further, the triangulation of secondary and survey data to answer the questions whenever possible will be another feature of my study that has been quite rare in the entrepreneurial research. I believe that the measures I have taken in the study will add to the quality of literature in the field.

Finally the issues of raised by my final two questions are quite novel to the best of my knowledge and its findings could add value to both entrepreneurship literature as well as evolutionary theory.

7. Conclusion

Entrepreneurs have long been considered important part of an economy, especially given their contribution to employment and economic growth. They have also been considered to be effective agents to carry economies out of recessions. Despite this apparent significance, the interplay between the two (entrepreneurship and recession) appears to have been somewhat neglected in the entrepreneurial literature.

The three broad questions I ask in this paper – who starts firms during recessions, what kind of firms are started during recession and how do these firms perform in relation to entrepreneurs and firms of economic growth has been adequately studied, especially given the importance of the topic. The questions are even more pertinent in the aftermath of the Great Recession, the effects of which can be seen in almost every economy. I believe that answering these three broad questions will give a more or less complete picture of the interplay between recession and entrepreneurship.

I have carefully selected the variables measurement approaches, modeling techniques and validating mechanisms based on the various meta-analytical studies done by different authors. I have taken into consideration their critiques of methodological approaches used in the historical studies. Making sure of the robustness of my study will be one of my main focuses.

The study will have important implications for policy makers, entrepreneurs, businesses and investors, and entrepreneurship literature. All of these parties will benefit from the fine dissection and analytical study of entrepreneurs and firm founded during recession.

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9. Appendix
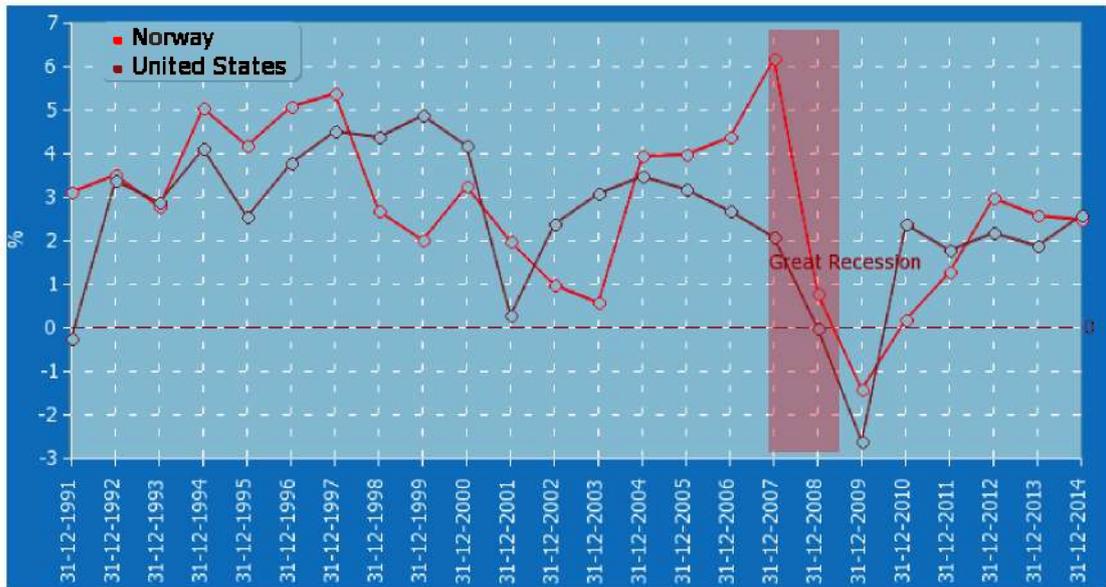

Figure 3: GDP Growth Rates (Source: mecometer.com)
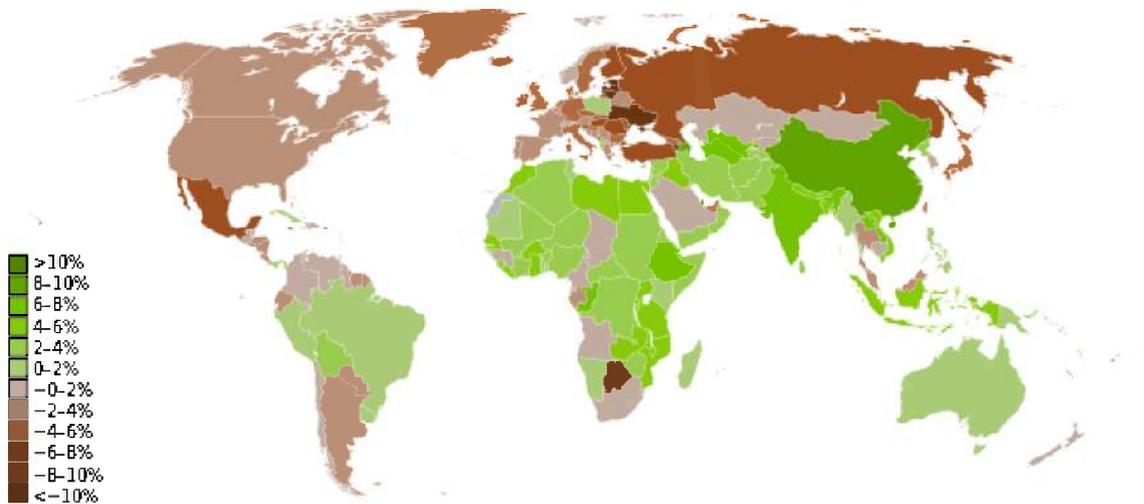
Figure 4: Severity of the Great Recession in different parts of the world (Source: www.seigniorage.de)

Table 1: Data Source: Statistics Norway

Statistisk sentralbyrå
Statistics Norway

Statistics Norway is an autonomous organization that is responsible for maintaining official statistics in Norway. The organization collects data on following subjects:

- The population and living conditions
- Resources and the environment
- The economy and national accounts
- Municipal, county authority and central government activities

As the organization puts, "Statistics Norway endeavors to produce and disseminate statistics and analyses of a high quality. All statistics from Statistics Norway should be relevant, current, accurate and accessible. All statistics are subject to strict privacy protection requirements."

The organization uses administrative registers and survey questionnaires as well as businesses and municipalities' own computer systems to gather raw data.

Source: www.ssb.no

Table 2: Data Source: Brønnøysundregistrene

Brønnøysundregistrene

Brønnøysund Register Centre maintains Central Coordinating Register for Legal Entities. The organization's vision, as it claims, is "to be a world leader in the best interests of Norwegian business and industry and public administration", and one of its main tasks is "to instill trust as a source of data" which is good for researchers.

This is an important source for firm level data. Making its data easily available to users is a priority for the organization and hence it is developing new solutions for the public access to the information in the registers.

Source: www.brreg.no

Table 3: Data Source: Global Entrepreneurship Monitor

GEM **Global**
Entrepreneurship
Monitor

GEM is a consortium of various national teams of researchers; each led by a local university, aimed at gathering various relevant data on entrepreneurship. This is probably the most comprehensive and biggest collection of such kind of data and is being used in entrepreneurial studies increasingly. It Is "home to over 400 specialists in the field of entrepreneurship research." GEM Norway is based at Bodø Graduate School of Business. It conducts two surveys every year:

- GEM Adult Population Survey which measures entrepreneurial activity, attitudes, and aspirations of individuals
- GEM National Expert Survey which measures factors that impact national entrepreneurial activity like finance, government programs, R&D transfer, entrepreneurial education and training, entry regulation etc.

Source: www.gemconsortium.org

Table 4: GEM Questionnaire for Necessity-Opportunity entrepreneurship

Are you involved in this start-up to take advantage of a business opportunity or because you have no better choices for work?

Take advantage of business opportunity..........................1
No better choices for work..2
Combination of both of the above...............................3
Have a job but seek better opportunities......................4
Don't know...-1
Refused..-2

Which one of the following, do you feel is the most important motive for pursuing this opportunity?

Greater independence..1
Increase personal income...2
Just to maintain income...3
None of these...4
Don't know...-1
Refused..-2

Table 5: CEO Survey from Chen et al (2006)

Rate on a seven point scale (1 = strongly disagree, 7 = strongly agree)

a) This organization learns new ways to apply its skills to develop new products that can help attract and serve new markets.
b) This organization identifies and develops skills that can improve their ability to serve existing business needs.
c) This organization identifies and develops skills that can help attract and serve new business needs.
d) The organization seeks out information about new markets, products, and technologies from sources outside the organization
e) This organization seeks out and acquires information and new ways that may be useful in developing solutions to multiple problems.

Table 6: Jackson Risk Taking Scale (Sample)

If you agree with a statement or think it describes you, circle TRUE. If you disagree with a statement or decide it does not describe you, circle FALSE.

True	False	If I invested money in stocks, it would probably only be in safe stocks from large, well known companies
True	False	If the possible reward were very high, I would not hesitate putting my money into a new business that could fail.
True	False	I consider security an important element in every aspect of my life.

Source: (Hyrsky & Tuunanen, 1999)

Table 7: Jackson Innovation Scale (Sample)

If you agree with a statement or think it describes you, circle TRUE. If you disagree with a statement or decide it does not describe you, circle FALSE.

| True | False | People often ask me for help in creative activities |
| True | False | I seldom bother to think of original ways of doing a task. |
| True | False | I often try to invent new uses for everyday objects. |

Table 8: Variables in the survey

S.N.	Variables	Answer Type	Data Type
1.	Motivation (Opportunity/Necessity)	Multiple Choice	Nominal
2.	Age	Number	Ratio
3.	Gender	Nominal (Male/Female)	Nominal
4.	Risk Preference	Dichotomous (True/False) questions based on Jackson Risk Taking Scale.	Ordinal
5.	Personal Wealth	Interval	Interval
6.	Education	1. Multiple choice (Primary, High School, College, Post Graduate) 2. Number of years of schooling	Ordinal Ratio
7.	Relevant Industry Experience	Number of years (Average in case of multiple owners)	Ratio
8.	Innovativeness	CEO Survey / Jackson Innovation Scale	Ordinal
9.	Cost Structure	Ratio	Ratio
10.	Ownership	Number Domestic/foreign	Ratio Nominal
11.	Size	1. Number of employees 2. Sales	Ratio Ratio
12.	Capital	Number	Ratio

Table 9: Factors affecting response rate (Phil et al., 2002)

Factors increasing response rates	Factors decreasing response rates
Incentives (monetary/non-monetary)	Sensitive information on questionnaire
Shorter questionnaire	Most general questions asked first
Brown envelope	White envelope
Colored ink	Instructions given
Personalized letter/questionnaire	Non-white name
Use of recorded delivery	
Use of stamped return envelope	
Contacting participants before sending	
Follow-ups	
Originating from Universities	Originating from Commercial organizations
More interesting	Less interesting

Figure 5: Selecting from most common multivariate techniques
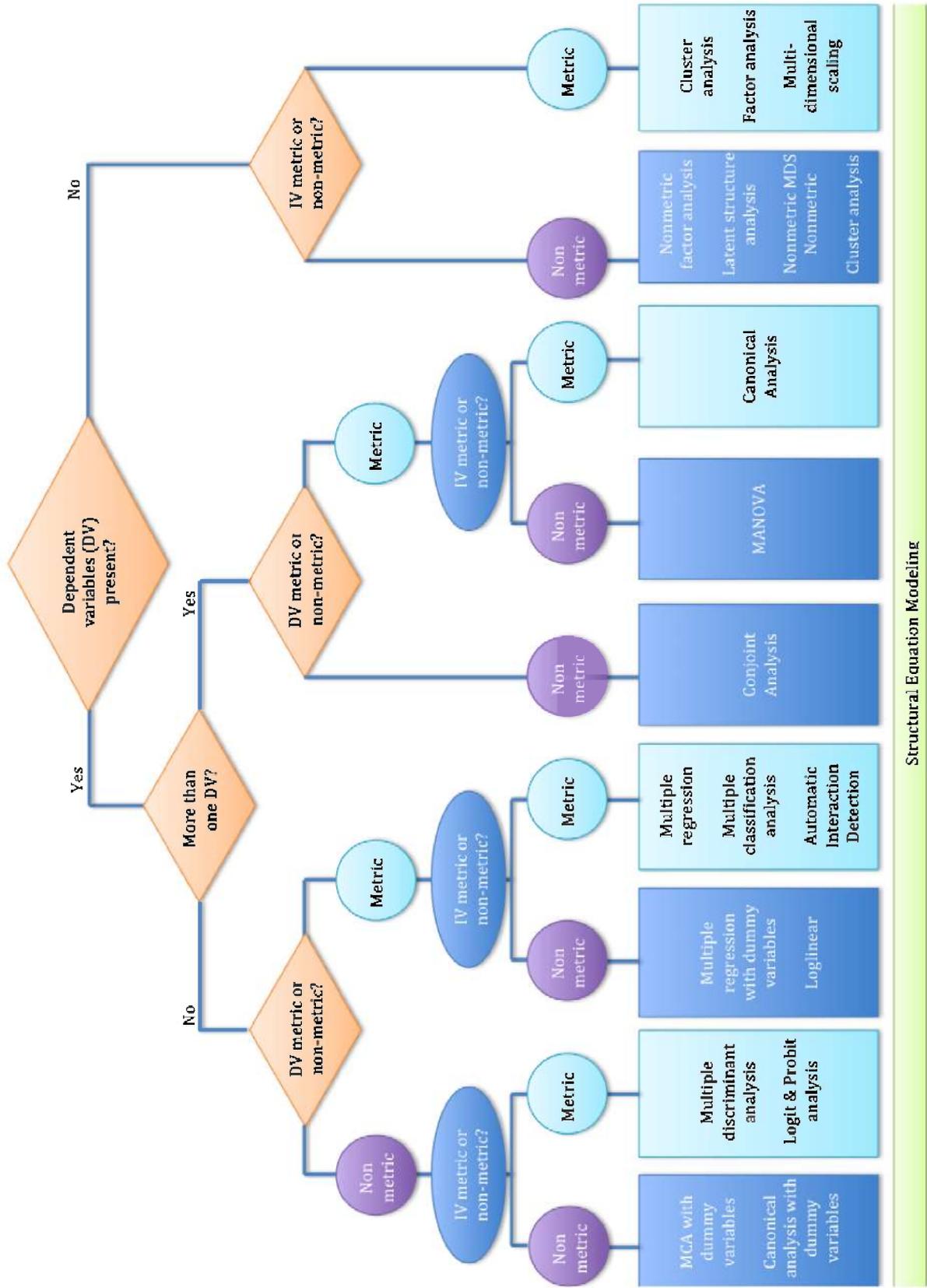
Note: Structural equation modeling may be used to analyze all various kinds of data.

Source: Cooper & Schindler (2006)