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The determinants of SMEs high growth: Some Evidence

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Abstract

This thesis sets out to provide a contribution to the on-going discussion on determinants of firm growth and its effects on firm growth (measured in sales). However, this study presents additional insights dissimilar to existing research in two ways: 1) The primary goal of the research is to determine the factors which are efficient indicators and predictors of high-growth firms and low growth firms.2) The present study uses an innovative model adopted in credit risk management to identify the predictors of firm's growth by using a probit regression procedure. Specifically, this paper follows an approach related to Z-score model (Altman, 1968), which forecast the possibility of default by means of a linear combination of financial ratios that differentiate among two different groups of firms: bankrupt and nonbankrupt firms. Various ratios are taken out from the annual statements before the period of default.

This is consistent with the idea that the financial statement at a time (t-1) affects the financial statement at a time (t). The same thought is being used in the present study with the significant difference that the focus is towards firm growth rather firm default. Except for the work (Sampagnaro 2013; Megaravalli, A. 2017), this approach has certainly not been employed from the point of view of firm growth.

The source of data came from the AIDA database, a commercial database provided by Bureau van Dijk. AIDA contains a comprehensive financial information of firms in Italy. For the study, we considered Small and Medium scale enterprise which belong to manufacturing industries and the period from 2012 to 2015: period to determine the high growth firms.2011: This period is the year before the rapid growth. In the study, the period selected for the study is 2011 to 2015 (this period is selected mainly to understand the predictors of firm growth during post-global financial crisis period).

Given the nature of the objective, Probit regression is one of the better statistical instrument which is more oriented to find a dichotomous dependent variable.

The result of the study shows that return on asset is positive and statistically significant for both high growth and low growth firm and accepts hypothesis 1 which argues that profitability affects firm growth positively. this result is also consistent with previous works (Chandler & Jansen ,1992, Mendelson, 2000 and Cowling, 2004). Further, solvency ratio shows the negative relationship for high growth and low growth firm. Further, firm age is negatively connected with firm growth for high growth firms, whereas positive for low growth firm and statistically significant. The result indicates that the chances of being high growth firm (HGF) are higher for young firms. This also confirms our hypothesis 3 which argues that younger firm, more likely that it becomes high growth firm, Whereas for low growth firm it is insignificant

KEYWORDS

High growth firm; firm growth; indicators of firm growth; financial ratios: Probit analysis

1. Introduction
1.1 Background

From the middle of the 1990s, study towards the evaluation of high growth firms has improved over the national economy, are of high interest to policymakers and academicians because rapid growth reflects firm success or market acceptance Fesser and Willard (1990). First, our main objective is not to give an overall description of firm growth, but to know what features allow us to better distinguish between the high-growth firm and non-high growth firms.

Second, our purpose is to identify the factors which are efficient indicators and estimators of corporate growth. To do so, it is very important to develop the methodology that best matches our goal Davidson and Wiklund (2000), specially as to the nature of the dependent variable to use (dichotomic versus continuous), and the kind of econometric model to apply (discriminant analysis or regression analysis).

Moreover, firm's high growth is understood as an excellent development in comparison with the average growth of other firms in the same industry, and not in absolute terms. These high growth firms are increasing more attention because they generate a number of new jobs Storey (1994). In the USA, for example, High growth firms are the main ones of creating roughly 70% of the jobs Cognetics (2000). This could be the major cause of growing attention in researching High growth firms.

High growth firms are considered an important stimulus to the national economy, are of high interest to policymakers and academicians because rapid growth reflects firm success or market acceptance Fesser and Willard (1990). Previous researchers focused on determining high growth firms and comparing high growth and non-high growth firm.

The growth of firms constitutes one of the central topics of interest to business and economic scholars. The investigation of firm growth delivers fundamental understandings of one of the key indicators of company performance (Wennekers & Thurik, 1999) as well as one of the fundamental factors of economies at all (B. H. Hall, 1988). Due to its role in economics, firm growth is of substantial interest to policy-makers based on its importance for job creation (Birch, 1987; Coad & Hölzl, 2012) and the productivity growth (Bartelsman, Haltiwanger, & Scarpetta, 2009).

Regulatory policy programs are often designed to support firm growth, hoping that these programs result in a net creation of jobs (Storey, 1994b). Additionally, firm growth is often regarded as a performance indicator of companies itself (Davidsson, Steffens, & Fitzsimmons, 2009) and is a top priority for top management executives (Brush, Bromiley, & Hendrickx, 2000; Gartner,2014).

For example, after being elected as the chief executive officer of The Coca-Cola Company in 2008, Muhtar Kent defined firm growth as one of its two top priorities going forward (M. Kent & Ignatius, 2011). Consistently, Joe Kaeser, recently elected chief executive officer of the German-based Siemens AG, named firm growth as his top priority to bring the company back on track after years of underperformance (Siemens AG, 2014). Consistently, firm growth is a key parameter in the decision-making process of financial investors (De Jong, Mertens, Van der Poel, & Van Dijk, 2012). Moreover, the growth of firms is a frequently debated topic in business media. Several of the major business print media have annual issues honouring fast- growing companies, e.g., the Business Week Magazine by Bloomberg or the Fortune Magazine (Nicholls-Nixon, 2005).

Consequently, it can be summarized that firm growth is an important topic for several interest groups and it is almost exclusively regarded as a positive phenomenon across these stakeholders. In addition to firm growth, the performance of companies constitutes another central topic of interest to a variety of interest groups. With respect to researchers, firm performance is considered as the most significant construct of strategic management research (Rumelt, Schendel, & Teece, 1994). The primary purpose of strategic management research is to identify the determinants of firm performance and thus support managers in increasing.

The growth of firms can be differentiated into organic growth, i.e., based on its existing assets and resources, and inorganic growth, i.e., via the acquisitions of other companies (Hess & Kazanjian, 2006). The differentiation of firm growth into its different modes has been mostly disregarded in firm growth research (Aktas, de Bodt, & Samaras, 2008; Davidsson, Achtenhagen, & Naldi, 2005). The different modes of growth have different benefits and drawbacks for a company. Consequently, an investigation of the financial performance effects of the different firm growth modes would be of "utmost value" to the field of firm growth research (McKelvie & Wiklund, 2010, p. 279).

Based on this, the primary objective of this dissertation is to identify determinants of high growth firm and low growth firm and identify the set of balance sheet ratio which are effective predictors of firm growth.

1.2 Objectives and Contribution

This thesis set to investigate the factors which are efficient indicators and predictors of high-growth firms. The advantages of greater predictability accrue to business owners, to creditors, and to the policymakers. For entrepreneurs, the value is the availability of a route-map to allow them to plan and examine the progress over a period (Dencker et al., 2009). This research is motivated by a desire to evaluate the factors which are efficient indicators and predictors of corporate growth during post-global financial crisis period (2011), which is considered as the year before the rapid growth.

The idea of predicting year before the accelerated growth can be found in previous studies on the similar idea, eg. Sampagnaro, G. (2013) and Megaravalli, A. (2017).

The measure of growth is sales, similar to the earlier study (Baum et al. 2001, Lumpkin and Dess 2001). We have determined the sales growth by taking relative growth measure and difference between the percentages of sales growth of the firms throughout the period 2011-2015.

In sum, the main contribution of the present research is the attempt to following a conventional model adopted in credit risk management to identify the estimators of firm's growth by using a probit regression procedure. Specifically, this paper follows an approach related to credit risk models based on accounting data, i.e. Z-score model Altman (1968) which forecast the probability of default through a linear combination of financial ratios that best differentiate between two a priori groups of firms: distressed and solvent firms. Financial ratios are taken out from the financial statements before the default.

So, the research question of the thesis is as follows:

1. Is there a positive relationship between profitability and firm growth (return on asset is used to measure profitability of the firms)? Provided such positive relationship is found, how does it effect in the case of high growth and low growth firms.

2. Is there a positive relationship between liquidity and firm growth? Provided such positive relationship is found, how does it effect in the case of high growth and low growth firms.

3. Is there a negative relationship between solvency and firm growth? Provided such negative relationship is found, how does it effect in the case of high growth and low growth firms.

4. Is there a negative relationship between firm age and firm growth? Provided such negative relationship is found, how does it effect in the case of high growth and low growth firms.

The first research question is consistent with theoretical literature and Kaldor and Verdoorn's Law in economics (Kaldor, 1966; Verdoorn, 1949). According to Friedman (1953), the relationship between profitability and growth is explained by theoretical models which approve the above mentioned concept of conformity in investment budgets. Profitable companies will be more encouraged to grow because they will not only have the financial resources to grow, but their constant profit generation will also make it feasible to maintain growth (Nelson & Winter, 1982). So, an attempt is being made to understand the effects of return on asset on Italian manufacturing firms.

The second research question is liquidity ratio, higher the liquidity positions the company better the ability of the firm in terms of paying its short-term requirements. The question is to be asked here is would the association found for high growth and low growth firm of Italian SMEs. The third research question is solvency ratio, which shows the ability of the firm in terms repayments of its debt, which in turn raises the obligation of the firm, this research question is interesting in order to understand how it is going to affect the Italian SMEs.

The fourth research question is firm age, in the study, it is argued that the younger firms will have higher growth when compared to its counterparts which are very well established in the markets. So in this study, an attempt has been made to understand how the firm age is going to affect the firm growth for high growth and low growth firms in Italy.

1.2.1 Contribution of the study

There has been an extensive study in the literature on the topic arriving at high growth firm using various measures of growth which is examined different markets. Many researcher's s focused on determining HGFs and comparing HGFs and non-high growth firm.

The main contribution of the study is using an innovative model adopted in credit risk management to identify the predictors of firm's growth by using a probit regression procedure. Specifically, this paper follows an approach related to Z-score model   This is consistent with the idea that the balance sheet at time (t-1) affects the balance sheet at time (t). The same idea is implemented here with the significant change that the analysis is extended to firm growth rather firm default.

Except for one work Sampagnaro, G. (2013) this approach has certainly not been employed from the perspective of firm growth evaluation. Since the seminal work of Altman (1968) on the credit scoring model.

1.3 Main Findings

The results of Probit regression (marginal effects) where explanatory variable is a period before the accelerated growth that is 2011. Liquidity ratio is statistically not significant for high growth firm and low growth firm and hence does not affect the firm growth, This result rejects H(2). As liquidity ratio positively effects the firm growth. Further, return on asset is positive for both high growth and low growth firms which also confirms the hypothesis. Solvency ratio for high growth firm is negative and statistically significant for high growth firm and positive but statistically insignificant for low growth firm. Further, firm age is negatively connected and statistically significant for high growth firms, whereas statistically insignificant for low growth firm and statistically significant. The Negative effect of firm age also confirms our H (3) (only for high growth firm).

1.4 Limitation of the study

Like any other study, the present study also suffers from several limitations. First, we used data which are limited to the time period 2011 to 2015. Using data over a longer time period would have led to more accurate results of the study. Second, the findings of our study are not generalisable to all the firms in Italy, since we only considered the manufacturing sector. The findings thus only apply to the manufacturing sectors and again limited to eight segments in the manufacturing industry. Third, we assumed that firm growth follows approximately a normal distribution in our study, while in reality, it follows a Laplace distribution. This problem could be tackled by taking the natural logarithm of turnover growth to make this variable more normally distributed.

Taking these limitations into account, there is certainly room for improvement. As mentioned before, future researchers can extend the research period to get more accurate results. It is also advisable for future research to not only use turnover growth but also use other measures to test the robustness of the different growth measures. And lastly, a longitudinal analysis instead of taking the average value over a couple of years could be more interesting for future research.

Chapter 2: Theoretical Background and Measure of Firm Growth

To conduct an analysis focusing on the components of firm growth and their importance for firm performance, an introductory definition of the terms "firm" and "firm growth" is necessary. This subchapter illustrates different explanations from the academic literature for both of these terms and the choice of the definition used as a basis throughout the remainder of this dissertation. Furthermore, a definition of firm performance as the major dependent construct of this thesis is provided.

2.1 Definition of the Firm

Since the purpose of this thesis is to analyze the growth of firms in detail, a clear definition of "the firm" is inevitable. The academic literature has created various definitions of the firm1 over time (Garrouste & Saussier, 2005). However, no generally accepted answer to the definition of a firm exists (Wernerfelt, 2013). In fact, the academic literature provides two streams focusing on the definition of a firm: (1) an economics-based stream dominated by Anglo-Saxon researchers and (2) a business-based stream. In the following, both streams will be illustrated in detail.

2.1.1 Business-Based Definition of the Firm

In addition to the economics-based definitions of a firm, a comparably more recent set of business-theory-based definitions of the firm is existent. Similar to the economic perspective, the business perspective provides varying definitions of the firm, which as well are still missing a generally accepted version. In his seminal habilitation paper, Gutenberg (1997) defines the firm as the core element of business theory. By combining human and material factors, a firm aims to produce and sell goods and services to third parties. A firm conducts these activities based on two principles: (1) commercially, firms target to maximize the return

on invested capital, since this is assumed to be most beneficial to economic welfare. (2) The decisions of firms are completely independent from external authorities.

Furthermore, Chandler Jr (1992) provides a very practical and one of the most cited definitions of the firm with an emphasis on four components. First of all, a firm is defined by its characteristic as a legal entity entering various contracts with employees, suppliers, and customers. The importance of the legal entity aspect is also mentioned by Hodgson (2002) as well as Biondi, Canziani, and Kirat (2008). Secondly, a firm is an administrative entity responsible for dividing, coordinating, and monitoring several activities. Thirdly, a firm is a collection of financial capital, physical facilities, and accumulated skills. Finally, in capitalist economies, firms fulfil the role of producing and allocating products and services (Chandler Jr, 1992).

2.1.2 Economics-Based Definition of the Firm

Coase (1937) generated the first seminal article with respect to theoretical considerations about the firm. In this article, Coase explains his reasons for the existence of firms and illustrates the differences between markets and firms building on the work of A. Smith (1863). Smith argues, a price mechanism in form of an "invisible hand" results in an optimal allocation of resources within an economic system (pp. 454-456). Coase (1937) disagrees with this concept in the context of a firm. While price movements organize production outside of a firm, i.e., in the market, the entrepreneur replaces these market transactions and allocates resources within a firm. Based on this, Coase identifies two reasons for the existence of firms.

Grossman and Hart (1986) and O. D. Hart and Moore (1990) both define a company by the assets it owns. Additionally, similar to Williamson's assumption, both articles consider substantial costs involved in the definition of complete contracts. In order to mitigate these costs, the relevant parties should enter into less costly, incomplete contracts and let one party

create a firm by buying the assets of which the usage has not been specified in the contracts (Grossman & Hart, 1986). The clear allocation of property rights, i.e., ownership, of the assets increases the overall efficiency of their management (O. D. Hart & Moore, 1990), exemplifying the benefits of firms versus the market.

2.2 Definition and Measures of the Firm

Since the previous sub-chapter provides a definition of the firm itself, this subchapter illustrates a definition of firm growth, as the major independent parameter of analysis within this thesis. Although firm growth is a widely used term in academic research, a generally accepted definition was and is still non-existent (Hutzschenreuter & Hungenberg, 2006; Young, 1961). Throughout this chapter, a general definition is provided followed by detailed illustrations with respect to a firm growth indicator, a formula to determine firm growth, as well as an appropriate time frame for the analysis of firm growth.

2.2.1 General Definition of Firm Growth

Firm growth as a specific development process, similar to biological processes, resulting in an increase of size or improvements in quality. Similar to Penrose's approach is the classification of growth into quantitative and qualitative aspects. Whereas quantitative firm growth refers to an increase of a measurable parameter that is representative for the size of a firm, qualitative growth corresponds to improvements of less quantifiable criteria, e.g., the quality of products or the quality of customer relationships (Hutzschenreuter & Hungenberg, 2006). Up to date, academic research primarily focused on analyzing firm growth as a change in the number of certain parameters, i.e., the quantitative aspect of growth (Davidsson, Achtenhagen, & Naldi, 2010).

This academic focus is emphasized by additional firm growth definitions explaining firm growth as an increase in the size of a company (Albach, 1965; Brockhoff, 1966; J. Grimm, 1966). The illustrated introductory definitions of firm growth establish the size of a firm as the basis of firm growth. Both parameters are intrinsically tied to each other. However, a clear differentiation between firm size and firm growth is important (Whetten, 1987). The size of a firm, in this case, is an absolute figure representing the scale of a company or an organization at a certain point in time (Kimberly, 1976). Contrarily, firm growth is a figure measuring the change of the firm size over time (Weinzimmer et al., 1998; Whetten, 1987). Consequently, the firm size acts as a reference indicator for the determination of firm growth within two points in time.

The explained relationship between firm size and firm growth leads to several subsequent discussion points regarding the definition of firm growth. (1) Since firm growth represents the change in the size of the firm, a discussion and selection of an appropriate firm size indicator and thus relevant growth measure need to be provided. (2) Furthermore, the mathematical derivation of firm growth needs to be discussed, i.e., how to measure growth from a quantitative perspective. (3) Since firm growth refers to change in size over time, a definition of a suitable time frame is important. The subsequent sub-chapters provide a detailed discussion of these three aspects.

2.2.2 Definition of a Firm Growth Measure

The choice of firm growth measures in academic research studies is considerably heterogeneous. Up to date, no agreement on a general firm size indicator in studies on firm growth exists. Consequently, researchers use a large variety of firm growth measures in academic studies (Birley & Westhead, 1990; Coad & Hölzl, 2012). However, the specific choice of a growth indicator used in academic research is of high importance to the respective results. D. Shepherd

and Wiklund (2009) empirically deviated low concurrent results among the range of growth measures.

For example, a high growth firm indicated by one growth measure may not be a high growth firm in terms of another growth indicator. Hence, the choice of growth measure potentially affects the findings of academic studies and thus needs to be selected wisely. D. Shepherd and Wiklund (2009) provide the most comprehensive literature review on the choice of growth measure by analyzing 82 empirical firm growth studies. Harmon, and Vadakath (1998) and Delmar (2006) also indicate both, the large variety of firm growth measures used in academic research as well as the predominant role of sales and the number of employees within this variety. Several factors establish the leading role of sales as the leading firm growth indicator. First, sales apply to virtually all type of firms.

Secondly, sales figures of companies are easily available. Thirdly, sales are relatively uncorrelated to the capital intensity of a company's business model. Fourthly, it is independent from a firm's level of integration (Delmar et al., 2003). Fifthly, every firm depends on the generation of sales in order to survive (Davidsson et al., 2010). Furthermore, it is the favourite growth indicator of choice for managers, investors, and entrepreneurs (Barkham, Gudgin, & Hart, 2012). Finally, it is argued that it is the increase in sales that require a rise in a firm's employees and assets potentially resulting in increasing market shares and profits (Flamholtz & Randle, 2012).

Consequently, based on these arguments, in the meantime, a trend among researchers to consider sales as the most relevant indicator of firm growth can be observed (Ardishvili et al., 1998; Hoy, McDougall, & Dsouza, 1992; Weinzimmer et al., 1998). Alternative concepts to the selection of one specific indicator are the use of multiple indicators separately or the use of an index measure.

The choice in growth measure for empirical studies needs to match the underlying theory and the respective research question. Academics are advised to invest time into the selection of an appropriate growth measure (Davidsson et al., 2010). Based on these contents, this thesis focuses on firm growth with respect to the growth in a company's sales, if not specifically stated otherwise on some occasions. However, in order to provide a comprehensive overview of the theoretical aspects of firm growth, other forms of firm growth despite growth in sales are considered in some cases, is regarded as valuable to the course of the study.

2.3 Theories of Firm growth

The result of numerous empirical studies in that firm growth decreases with size (Geroski, 1995; Caves, 1998). This represents a "stylized fact" in the opinion of some authors (Acs and Audretsch, 1990). The negative correlation between growth and size, one the other hand, contradicts "Gibrat's law", according to which growth follows a random walk approach and is not correlated with the firm size. Since the early sixties, numerous empirical studies have been conducted to analyse the applicability of "Gibrat's law" (for extensive surveys see Wagner, 1994; Geroski, 1995b; Carrer, 1996; Sutton, 1997; Caves, 1998).

As per Mansfield (1962) Gibrat's law can be tested in following three ways: (1) for all companies within a given market in the considered time interval including also the companies which do not survive (2) only for surviving companies in the regarded period; (3) only for firm's large enough to reach the minimum efficient scale (MES). When differentiating firms by size, one can observe that deviations from the law become less with growing firm size (Evans, 1987; Hall, 1987). Analysing large firms, some studies cannot reject the law (Hall, 1987).

Most of the analysis was carried out with data from the manufacturing sector. Audretsch et al., (2004) conducted the study to examine the "law" for the Dutch hospitality sector with the identical approaches applied in this study. The law is accepted in 4 out of 15 cases for five business branches. Most of the studies reject the validity of the law (e.g. Wagner, 1992; Reid, 1995; Harhoff, and Woywode, 1998; Weiss, 1998; Audretsch et al., 1999). Wagner (1992) tests the law for manufacturing companies in Lower Saxony in the time period from 1978 to 1989.

The results of the study suggest that "Gibrat's law" cannot be rejected in all specifications due to the point that the interference phase in the development equation employs a first-order autoregressive process. This indicates that the growth process of firms follows a certain "persistence of probability", i.e. it is possible that firms noticing above average growth in one Period will grow considerably in the following period. For Scottish micro-firms (younger than 3 years and less than 10 employees). Moreno and Casillas (2000) point out that high-growth firms exhibit two main characteristics: (1) they experience a powerful growth in size, which in majority of the cases leads them to maximize as much as double their initial size; and (2) this fast growth takes place in a very short span of period, which ranges between four to five years (regardless of what measures have been used to determine firm growth rate, i.e. growth in sales, employee headcount and so on.).

Mason and Brown (2013) suggest that regulators and policymakers should be focused towards promoting high-growth and start-up firms. Based on the empirical study, HGF can be of any size. Gibrat law has an extensive background in economics (Gibrat 1931; Ijiri and Simon 1964; Levinthal 1991; Denrell et al.2015).

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More formally Gibrat law can occur through the random walk process:

$$s_t = s_{t-1} + e_t \qquad\qquad\qquad (1)$$

Where *St* is the logarithm of a firm size which is measured in terms of revenue from sales and services (Sales) at time t and e_t is a random shock (additive in logs) with mean u and variance as σ^2. To test the whether the growth is random walk; unit root test is applied in the study.

Gibrat law anticipates that all firms have the similar likelihood of growth, irrespective of their initial size. The market will tend to focus because the largest firms will maximize their weight in the market. This means that firm size will certainly become log-normal (right-skewed). Due to the random occurrence, firms will gradually diverge in size, and the market concentration will increase even though the firm's growth prospects are still the same. Acting as an economic decision, innovation is either to apply or adapt the implementing of an intellectual creativity.

Schumpeter 's theory it is the building block in studying the relationship between firm size and R&D activities (Freeman, 1982; Cohen and Klepper, 1996), where innovation is primacy for firm growth (Schumpeter, 1934, 1942).

Schumpeter (1942) highlights the significant role of large companies in innovation. Since large companies dominate the market, it will be easier for large firms to acquire innovative assets. Besides, skilled teams in large firms with constant problem-solving ability promote the innovative products or technology, which provide a 6-wealthy land for growth (Loasby, 1998). Compared with small entrepreneurial companies, large companies are superior at developing collective innovations instead OF revolutionary innovations (Acs and Audretsch, 2005).

The primary innovative profits theory of Schumpeter's (1934) shows the functionality of entrepreneurial activities, focuses on the important function of brand new innovations in earnings reaping. Schumpeter assumed that competition and entrepreneurship produced innovation. The process of creative destruction ceaselessly reforms the economic pattern endogenously, incessantly destructing the old pattern and inventing a new one.

The creative destruction theory believes that it is innovations that drive business cycles and economic development. The innovative commodity, technology or procedure brings a crucial advantage over cost or quality, which threatens the foundation and operation of the incumbent firms. New technology produced by innovative activities was the main driver of firm development, because of to first mover benefits. Based on the new probable functionality, the quasi-monopoly roles of the innovative companies allow new value and a lot more revenue earned by innovation. As per Schumpeter, small companies seem to be more entrepreneurial and therefore much superior at developing revolutionary innovations (Acs and Audretsch, 2005).

2.3.1 Some theories of Firm growth

The various types of theories of growth: models of optimum firm size, stage theories of growth, models with Penrose effects and models of organizational capabilities.

(a) Model of Optimum firm size

Many economists search for stable state equilibrium as a foundation upon which to do comparative static exercises, and much of the theory of the firm has been depicted in these terms. The oldest and best-known discussion recommends that competition will drive firms to the bottom of their U-shaped average cost curves. If firms have market power, then their optimum size may vary from this minimum cost position, and, if economies of scope exist, such distinctions may be more noticeable (and, of course, firms will be diversified in this case).

Few studies have suggested that the degree to which costs are (endogenously or exogenously) sunk and the intensity of competition may also be significant determinants of firm size (and market structure). Further, internal organizational factors may be as significant as market competition and technology in determining firm size.

(b) Stage theories of growth

There have been a number of attempts over the years to identify life cycles of firms, model their evolution or at least pick out identifiable stages through which they grow. For example, Greiner, 1972, suggested that firms evolve through five stages, each characterized by a period of reasonably stable growth. These stages (which is identified with a label which indicates the nature of the management issue characteristic of each: "creativity", "direction", "delegation", "coordination" and "collaboration") are separated by four crises (of "leadership", "autonomy", "Control" and "red tape").

Garnsey, 1998, has designed a model of corporate growth which records a set of stages which correspond to the development and deployment of new internal resources in young firms. Finally, Mueller, 1972, suggested that what a firm does (i.e. its propensity to maximize profits or sacrifice profits for growth) varies with age (and other factors, like investment opportunities).

The profit-maximizing firm is most likely to enjoy only a limited burst of growth connected with every single innovation. However, if the innovation fuels sufficient growth to weaken the power of shareholders, then managers will gradually acquire some room to exercise discretion. They are liable to be more interested in the size or growth of the firm than in its profits, they will take benefits of this discretion to reinvest too much of the proceeds from the innovation into this or other investment avenues. As a result, "too much" growth is likely to be connected with each innovation, and it is probably to go on for "too long".

(C) Penrose model

The classic study of the growth of firms by Penrose contains two quite different types of arguments. One is a "resources push" theory of (endogenously driven) growth. The other argument in her book is the famous "managerial limits to growth".

This argument begins with the idea that management is a team effort in which individuals utilize specialized, functional skills as well as highly team specific skills that enable them to collectively organize their several activities in a coherent manner.

The knowledge which underlies these unique skills is likely to be tacit, and can only be acquired experientially or by direct training from existing managers. Hence, as the firm expands, it needs to hire new managers and it must divert at least some existing managers from their current operational assignments to help manage the process of expanding the management team.

Diverting present managerial resources to training new managers bears an opportunity cost, the quicker is the planned growth rate of the firm, the higher are these costs of growth likely to be (i.e. Adjustment costs are variable and not fixed). Under these situations, firms are most likely to smooth out their responses to existing growth opportunities, sacrificing present profits but saving some of the costs of growth which they might otherwise incur to gain those profits. As per Penrose, the firm organises the productive resources which include human and non-human resources which are used to produce goods and services with the main objective of earning a profit (Penrose 1989, 1985, 1995). From the resources within the firm, human resources, specifically, managerial resources are most significant. The main reason could be any expansion requires 'planning' and this can be done by firm's management, which is firm-specific and is not available on the open market.

(D) Organizational capabilities model

Penrose believed firms as bundles of resources organized together by a set of administrative skills or capabilities which are utilized as effectively as possible. Nelson, for example, suggested that: "successful firms can be recognized in terms of a hierarchy of practised organizational routines, which define lower order organizational skills and how these are coordinated, and higher order decision procedures for choosing what is to be done at lower levels" (1991, pp. 67-68). Firm's resource base and they define what the organization is capable of doing (or what its "competencies" are).

These capabilities are almost always thought of as bundles of skills, and, indeed, they are one of the more significant repositories of tacit knowledge inside firms.

The point that knowledge is the base of organizational abilities or competencies means (at least) two things: first, these capabilities are not assets (and do not, therefore, appear on balance sheets, and cannot be acquired and sold), and, second, that they can only be learned or maintained through use (hence, people typically talk of "practised" regimens).

Each firm is likely to have some specific skill or knowledge base and then build it idiosyncratically over the period of time as it utilizes what it has inherited and what it has discovered to build new skills and an augmented knowledge base. This indicates that each firm's development is likely to be path dependent. Further, if, as Penrose suggested, internal resources are discrete, then firms may have stocks of underutilized resources which "push" it on to further expansion.

(E) The quality ladder model of firm growth

Klette et al. (2000)'s theoretical model integrates R&D expenditures and stochastic innovations into the growth pattern of firms. Unlike Schumpeter (1943), Klette et al. (2000) suggest that the R&D intensity is independent of the firm size. Competitive pressure facilitates the strategy of product differentiation, and innovative R&D activities are 7 performed to avoid straight competition from the market. One of the key assumptions of the model is that there is a positive link between the sales growth of a firm and its product quality.

Cumulative innovations are the essential process in the quality ladder model. Due to the innovative firms have the patent advantage, in the time lag of following firms catching up, the advantage enables their profitability.

The model assumes that the sunk costs of R&D investments increase proportionally with the innovative levels, and are lower for incumbents than for the entrant. The sunk cost of R&D investments is acceptable if the expected profit could be more than the expenditures. Greater earnings encourage more reserve and development expenses and further leads to more innovative actions. A Virtuous cycle is then established if the firm is profitable due to the previous R&D expenditures, there will be more investment in R&D activities as a result.

Chapter 3: Small and Medium Scale Enterprise access to finance and its Credit constraints

3.1 Introduction

At the start of the transition period in Central and Eastern Europe (CEE) firms tended to be large, inefficient and vertically integrated where there was a clear absence of small and medium-sized enterprises (Roland, 2000). The subsequent privatisation and restructuring of state-owned enterprises combined with the introduction of market forces resulted in the emergence of new small firms and a decline of old inefficient ones. The SME segment is frequently considered an essential engine of economic development (Helfand et al, 2007; de Kok et al, 2011). On the other hand, few academic studies have recognized that young instead of small firms are the major contributors to employment growth (Haltiwanger et al 2010; Dixon and Rollin, 2012; Lawless, 2013; Criscuolo et. 2014).

These research show that, because young firms also seem to be small, there is a wrong perception that small rather than young firms are the drivers of growth. The accessibility of external funding for small and medium enterprises (SMEs) is an important study of attention to academicians and policymakers around the world. The conceptual structure to which most of the present study has been quite beneficial in understanding the institutions and markets that supply funds to SMEs in developed and developing countries.

Many studies have reviewed that small and medium enterprises (SMEs) are financially more confined than large firms and are less probable to access finance. Most of the studies targeted at the SME segment are dependent on the premises that (I) SMEs are the engine of economic progression, but (ii) market and institutional breakdowns prevent their development, thus justifying government interventions.

Despite the increasing attention of the development group in subsidizing SMEs, however, there are sceptical opinions that question the usefulness of pro-SME policies. Particularly, many critics emphasize the significance of the business environment facing all enterprises, large and small. This conceptual structure has also given information to the policymakers that impact accessibility of financing to creditworthy SMEs in these countries. Policy initiatives focused at SMEs have normally been justified with reasons they are (I) SMEs are an engine of innovation and growth, (ii) they help reduce poverty as they are more labour-intensive, but (iii) they are constrained by institutional and market failures.

While country-level and micro-economic studies have not provided conclusive evidence on these justifications, cross-country analysis does not support the argument that nations with a bigger share of SMEs in the manufacturing industry grow quicker (Beck, Demirgüç-Kunt and Levine, 2005). Some researchers (Cofie, 2012; Ahiawodzi and Adade, 2012), the SMEs segment can do much better with regard to its contribution towards GDP. The economic slowdown from the 2008 financial crisis has made to look on access to finance for small and medium-sized firms.

The root base of the economic slowdown lay in the overvaluation of assets, primarily those guaranteed by mortgages. As these assets begun to lose value, it was uncertain who possessed them and so was subjected to the losses. Bank was reluctant to lend to each other, and limitations in lending fed through into the broader economy: the 'credit crunch' (Cowling et al., 2012). Five years after the first shock to the financial crisis, bank lending had still not restored specifically for smaller firms. There is a common opinion that this held back the economic restoration of many nations, including the United Kingdom (Filippetti and Archibugi, 2011).

Ackah and Vuvor (2011) are one among those researchers who identified the constraints of SMEs in accessing the finance from the fund's suppliers. In the microfinance and SMEs literature, several challenges are recognized as obstacles against accessing the credit services. Some of these obstacles are: SMEs are not able to provide the collateral security; inadequate records maintaining; very poor credit rating as an effect of poor history in maintaining reserves, and rigorous lending policies of financiers which make difficult for SMEs to access the funds (Ackah and Vuvor, 2011; Cofie, 2012).

3.2 Literature review and definition of SMEs

Banks make a wide range of loans to different types of customers for various purposes. However, small businesses often experience challenges when applying to finance providers for credit to finance their fixed capital investment and to provide working capital for their operations (Tucker and Lean, 2003). SMEs' access to bank loans is mainly impacted by both demand and supply difficulties. The demand constraints means elements that make it complicated for SMEs themselves to look for external finance from financial institutions such as inadequate quality of prospective projects that meet the requirements for funding and the inefficiency of SMEs to draft effective business plans. SMEs are seen to be risky because lots of them do not survive due to a various number of reasons.

SME closure rates are more than 20% per annum (Liedholm, 2001) and most of them don't succeed in their initial year (Biekpe, 2004). The degree of risk is inversely associated with the size of the enterprise. In terms of transaction costs, banks encounter higher transaction costs in their dealings with SMEs. The cost of lending May in some conditions be viewed as fixed.

These costs consist of administrative, legal and acquisition of data from a specialised agency. Bilkey (1978) who tried to review the literature on export tendencies of firms and noticed that the most critical hurdles to exporting noted by U.S. firms in the scientific research are: insufficient funds, foreign government constraints, insufficient expertise about foreign selling prospects, inadequate product distribution in overseas market, has and an absence of overseas market associations.

Previous empirical studies have also noted that though banks the main source of external finance for small firms it is more challenging for them to receive bank loans than do large companies (Petersen and Rajan, 1994; Cole and Wolken, 1995; Schiffer and Weder, 2001). Small firms get only 30% of their funding from external sources, whereas large firms meet up to 48% of their funds from external financing (World Bank,2004). Binks et al. (1992) caution that limited access to bank debt by small firms may not be specifically attributable to the firm size but instead to difficulties connected with the accessibility of information from which projects are assessed.

They state that such information difficulties are not peculiar to the small firm's segment alone, but are prevalent there because of the estimated (proportionately) higher costs involved in collecting information connected with that segment. The provision of finance by a bank to a firm could be regarded as a simple contract between the two parties in which the bank is the principal and the small firm is the agent. Beck et al. (2005) recommend that financial constraints affect the smallest firms most negatively and that an incremental enhancement of the financial system that allows to loosen up this restriction will be most effective for SMEs.

Credit providers usually choose borrowers who have recorded good profits, some level of longevity, and assets that can be utilized as collateral (Cole and Wolken, 1995). In reducing the risk connected with engaging with prospective loan borrowers, banks utilize certain strategies. They may increase the rate of interest on loans for the riskier borrowers which also include small and medium scale enterprises to indicate the higher uncertainty of repayment (Berger and Udell, 1995a, b). Petersen and Rajan (1994) validate in their research that smaller enterprises pay higher interest on loans than larger firms. The higher rate of interest rate charged by banks is due to high risk involved in lending to these to cover the risk involved.

In summary, the major constraint of SMEs is lack of accessibility of funds which is one of the major hurdles for their growth and investment and the financing constraints are attributable to the SMEs' less efficiency in presenting good and effective business plans, greater levels of informational asymmetries associated with SME lending, increased transactional costs, fundamentally more risky characteristics of SMEs and institutional weakness in developing nations that make it more challenging for financial institutions to lend to SMEs. SMEs accessibility to bank lending could be improved by the provision of collateral, good track record and longer business associations.

3.2.1 Definition of SMEs

Many countries and firms define SME by setting their own guidelines for defining SMEs, frequently based on employees, turnover or assets. Egypt defines SMEs as having more than five and fewer than 50 employees, Vietnam defines SMEs to have the employees between 10 and 300. The World Bank considers SMEs as those firms with more than 300 employees, $15 million in annual revenue and firms having assets of $15 million.

As per Inter-American development bank SMEs can be defined as having more than 100 employees and less than $3 million in annual revenue Storey (1994) attempts to sum up the risk of applying size to define the status of a firm by stating that in some industries all firms may be considered as small, whilst in other industries there are probably no firms which are small.

Weston and Copeland (1998) hold that explanations of the size of enterprises experienced lack of universal applicability. In their perspective, this is because firms may be conceived of in different terms. Size has been defined in various contexts, in terms of the number of employees, annual sales, Industry of enterprise, ownership of enterprise, and value of fixed assets. Van der Wijst (1989) defined small and medium businesses as privately held firms with 1 – 9 and 10 – 99 employees. Jordan et al (1998) considered SMEs as firms with fewer than 100 employees and less than €15 million sales.

Michaelas et al (1999) define small independent private limited firms with fewer than 200 employees and López and Aybar et al (2000) defines firms with sales below €15 million as small. The definition of SMEs varies from nation to nation and between the sources reporting SMEs statistics. Although there is no universally agreed term of SME some of the generally used criteria are the number of employees, value of total assets and size of the capital.

Among them, the most common definitional basis used in employees and here again there is a variation in defining the upper and lower size limit of an SME. In the United States and Canada, SME generally includes firms with less than 500 employees.

The European Union definition for medium scale enterprise is determined whether an enterprise is an SME are:

Table 1: Definition of SME (As per EU recommendation 2003/361):

Firm Category	Employee Count	Turnover	or	Balance Sheet total
Micro	<250	≤ € 50 million		≤ € 43 million
Small	<50	≤ € 10 million		≤ € 10 million
Medium Sized	<10	≤ € 2 million		≤ € 2 million

In the case of Japan, SMEs includes firms with less than 300 employees and capital size of 300 million yen or less in manufacturing, with 250 employees, a firm with employees less than or equal to 100 and size of capital is equal to or less than 100 million yen in wholesale industry, and companies which have of 50-100 or less and capital size of 50 million yen in retail and service sector.

3.3 Importance of SMEs in Economic development

The importance of the role of SMEs in the development process continues to be at the forefront of policy debates in all developed and developing economies. The advantage claimed for SME are numerous, such as the support for entrepreneurship by regulatory policies; the higher possibility that SME will utilize labour-intensive technologies and thus have an immediate

Impact on employment generation; they can normally be set up rapidly and put into operation to generate quick returns and they may well become a countervailing force against the economic power of the larger companies.

More generally the development of SMEs is seen as accelerating the achievement of wide socio-economic objectives, including poverty alleviation. The capability of the SME to grow relies upon on their possibilities to invest in restructuring, research and development, and qualification. All of these investments need capital and therefore access to finance. With this backdrop, the constantly repetitive concern is the SMEs facing challenges regarding access to finance is a highly appropriate concern that endangers the financial growth of the country. There is a common opinion that the performance of SMEs is significant for both economic and social growth of developing nations.

From the economic perspective, SMEs present a variety of advantages (Advani, 1997). SMEs have been spotted to be one of the significant areas of worry to many policymakers in an effort to speed up the pace of development in low-income nations. These firms have been identified as the engines through which the growth objectives of developing nations can be accomplished. SMEs are potential sources of employment and income in many developing nations.

They are able to resist adverse economic problems because of their versatile nature (Kayanula and Quartey, 2000). SMEs are much more labour extensive than larger firms and consequently have the lower cost of capital with respect to the creation of job (Anheier and Seibel, 1987; Liedholm and Mead, 1987; Schmitz, 1995). Small business enterprises, especially cottage industries, which can be found in the rural areas, have helped create employment capabilities to reduce the problem of rural-urban drift whereby many young school leavers from the rural areas flock to urban centre in search of non-existing jobs resulting in increase in population and other social vices in the urban areas (Saffu et al, 2007).

The expansion of small business enterprises has attracted the provision of utilities such as electricity, water, improved communication and transport as well as the provision of other social amenities that have made the life in the rural areas more attractive. This has, in turn, motivated the young school leavers to stay in the rural areas, to contribute their quota to the resuscitation of the economy.

Moreover, SMEs operations can be started on a quite a low capital and at the same time on a Part-time base. SMEs also have the advantage of being quickly able to adapt to new customer Demands. Proprietors of SMEs are closer to their clients, which makes them more Accountable and leads to greater customer loyalty. This is particularly challenging for large Firms due to their internal bureaucracies.

They carry out valuable roles in ensuring income stability, economic development and job creation. Since SMEs are labour intensive, they are more likely to succeed in smaller urban zones and rural places, where they can play a role in promoting economic activity in an area and can support to slow the movement of migration to urban areas. Due to their regional dispersion and their labour intensity, it is believed that small-scale enterprise can promote a more equitable circulation of income when compared to large firms.

SMEs also increases the efficiency of domestic markets and make effective use of limited resources, thus enabling long-term economic growth (Kayanula and Quartey, 2000). SMEs play a significant role in a country's national product by either manufacturing products of value, or through the provision of services to both customers and/or other businesses.

This involves the provision of goods and, to a smaller extent, services to international customers, thereby increasing the overall exports of the country.

3.4 Sources of finance for small and medium scale enterprises

Finance in small business enterprises refers to some kind of wealth used to create more wealth for the business. Finance exists in a form of cash. There has always been the tradition of people saving and/or taking funds from individuals or group of individuals or self-funding to start the venture. With regards to finance there are numerous forms sources of finance available to SMEs. These include the following:

a) Internal Financing

Internal financing means the firms get funds from internal sources, mainly including retained profits and depreciation, which is an essential part of the survival and development of the firms. In general, internal financing is the primary option, an essential source to get funds.

Internal financing can be as follows:

1) Retained Earnings financing

Retained earnings is a significant channel of internal financing, and most firms choose this, as it is basically a process that transforms retained earnings into investment, the advantages of using this fund as follows: primarily, there is no actual cash expenditure; secondly, using debt capacity; furthermore, no effects on corporate control. However, some limitations are revealed, such as time restrictions, retained earnings requires more time to accumulate, besides, retained earnings financing need to balance with dividend policy.

2) Depreciation Financing

Depreciation financing of fixed assets financing is a technique that uses the difference induced by opportunity cost and depreciation. And depreciation tax can bring internal funds to some level, minimizing the pressure of SMEs, promoting the growth of the firms.

b) External Financing

 External financing includes firms raise funds from other independent economical organisations, which includes agencies involved in direct and indirect financing, direct financing includes stock financing, public funds, bond financing. Indirect financing includes non-banking financial corporations and bank loans. When compare to internal financing external financing can raise funds on time but the cost of capital will be high. External financing can be as follows:

1) Direct Financing

a) Bond Financing

Bond financing required firms to issue the bond to investors in accordance with a set of regulatory frameworks, where investors will be paid certain interest for certain period of time, and repay principal amount according to certain regulations. Bond financing is relatively flexible, interest and principal repayment can be formulated as per the corporate policies. However, issue of bond is followed by the certain regulatory framework which will vary as per the individual country policy.

b) Equity Financing

Equity financing means firms shareholder give up part of ownership and introduce new shareholders by raising the capital of firms. This shows an advantage that firms don't need to pay interest, but new shareholders can share firms' profits with old firms.

c) Public Funds

Public funds primarily include commercial credit and private lending. Commercial credit means organisations provide credit with a direct connection to commodity transaction each other, which includes payment by credit or instalments, and down payment, which can prevent a lot of restrictions like bank loans and decrease the cost of capital on raising funds. Private lending is that the lending occurs between the individual and company.

2) Indirect Financing

a) Bank Financing

Bank financing is a method of raising funds where banks will act as an intermediary for raising funds. It is the usual method for corporate to raise capital, yet, bank loans have many limitations, such as the scale of the corporate, credit limit. Besides, the limit of credit and time of loans have been strictly designed.

b) Non-Banking financial corporations

Financing from non-banking financial corporations except bank has several methods, primarily includes finance leasing and Pawn Loans.

Finance leasing is an exchange of risks and rewards of ownership of the leased asset to the lessee, where actual ownership lies with the actual owner of the asset and financial leasing has specific benefits in solving the challenge of corporate financing compared with other financing methods.

When compare to bank loans, pawn loans need to pay higher interest and also have a higher cost of capital, need to pay an additional fee for safekeeping the asset, premium, and pawn transaction costs. Due to this reason, pawn transaction is very expensive and also the volume of transactions is low. The advantage of this financing is operation process is simpler, quick and timely solve the requirement of the firm.

The finance segment has seen some form of evolution to its present state. This is due to the Various economic policies and plans carried out by various governments in order to promote the growth of SMEs. According to Adjei (2012), a critical thought in selecting the source of financing business is to clout an equilibrium between equity and debt to ensure the funding structure suits the business. This, therefore, suggests that bank does have the right and can decide on the interest to charge. However, the balance is to ensure that SMEs are not burdened with excess finance to pay.

3.4.1 Other Sources of Funds

An entrepreneur may raise funds for various purposes based on the time periods ranging from very short to fairly long duration. The total amount of financial needs of a company depends on the nature and size of the company.

They can finance their business by the following means:

- Investment of own savings

- Raising loans from friends

- Arranging advances from commercial banks

- Borrowing from financial institution

Firms can raise funds by a various method. The most conventional routes for raising finance and they are as follows: -

a) Issue of shares and Debentures

Here, the companies can raise the funds in the primary market through Initial public offering where the liability of the shareholders is limited to the face value of the shares and the return for the investment is in the form of a dividend to the shareholders. Companies can also borrow and raise loans by issuing debentures. The company is liable to pay interest even if there are no profits. Debentures are generally issued to fund the long-term requirements of the company.

b) Business Angels

Business "Angels" are high net worth investors typically invest in Industry or technologies which they are more familiar. They often co-invest with trusted friends and business associates in these circumstances, there is generally one significant lead investors ("archangel") who represent the other group of angel investors.

c) Corporate Funds

This relates to funds and financial resources belonging to companies and not private individuals, destinated to be managed by a venture capitalist and this focused-on financing company in the development stage.

d) Mutual Funds

Mutual fund investment represents a very important channel for venture capital, in particular, the closed-end funds represent an instrument capable of meeting the requirements of the start-up companies.

e) Banks

The banks and financial intermediaries (insurance companies, finance companies and investment banks) normally have the necessary expertise to value industrial projects and to raise funds for their realisation.

f) Private Equity

Private equity is an asset class comprising of equity and debt in operating firms that are not publicly traded on a stock market. A private equity investment will usually be made by venture capitalist firm and private equity firm or an angel investor. Each of these investors has its own set of objectives, priorities and investment strategies.

Private equity firms provide working capital to a portfolio firms to nurture business expansion, new – product advancement, or restructuring of the firm's operations, management, or ownership. Each stage of the company's lifecycle exhibits certain risk profile and requires a specific set of strategies.

3.5 Types of capital

Finance in small business enterprises is important in terms of providing the necessary capital Requirements during its financial planning. Financial capital is essential in order to get a business off the ground. The source of capital comes from two sources: debt and equity. Debt capital means borrowed funds that must be repaid at a later stage, generally with interest. Typical forms of debt capital are loans from banks, personal loans, overdraft agreements and credit card debt. Equity capital refers to funds generated by the sale of shares, either common or preferred shares. While these funds need not be repaid, investors expect a certain return on investment either in the form of dividend or appreciation of share price in the secondary market. Five basic types of capital required by a business have been identified as (a) Fixed capital (b) Working capital (c) Growth Capital (d) Human Capital

a. Fixed Capital

Fixed capital refers to any kind of any kind of asset which cannot be used in the manufacturing Process and also referred to as fixed assets and is contrasted with circulating capital such as raw Materials, Operating expenses and the like.

Fixed capital is that percentage of the entire funds which is invested in fixed assets (like land, buildings, vehicles and equipment) that stay in the business almost permanently, or at the extremely lowest, for more than one financial year.

b. Working Capital

In general working capital is cash available for day to day operations of a firm. Strictly talking, a firm needs liquid cash (and not working capital) to be in a position to purchase assets or to manage the day to day expenses. In accounting terms, working capital is the net liquid assets computed by deducting current liabilities from current assets.

Sources of working capital are net income, long-term loans (non-current liabilities), sale of capital (non-current) assets, and injection of funds by the owners (stockholders).The requirement of obtainable working capital is a measure of a firm's potential to meet its short-term requirements. Ample working capital allows management to avail of unexpected prospects, and also good working capital position enables the firms to be eligible for financial credit from the bank and other financial institutions and also beneficial trade credit from suppliers.

C. Growth Financing

Growth financing is a kind of private equity funding, commonly invest in less amount of capital, mostly invested in well established companies that are looking for funds to extend or rebuild the business, and expand the markets or financing an important acquisition without a change of control of the firm. Growth financing is generally invested in common equity, although certain investors will use various hybrid securities that include a contractual return (paid in the form of interest).

D. Human Capital

Human capital is a less tangible topic, but its contribution to a firm's growth is very significant. Human capital refers to the skills and abilities a firm's employees bring to the operation. It's difficult to measure human capital from money, most companies know that employee efficiency can be greatly improved by constant training, professional growth, seminars and healthy-living programs. Many companies choose to invest more on team building activities and employee friendly policies mainly because this investment indirectly benefits the bottom line by boosting employee morale and increasing the level of job satisfaction which in turn reflect in higher quality in the performance of individual workforce of the company.

3.6 SMEs financing constraints: An overview

Accessibility to finance is essential to create an economic environment that allows companies to grow and prosper. SMEs in developing nations, however, face major barriers to finance.

Financial constraints are greater in developing, but SMEs are specifically constrained by gaps in the monetary system such as high administrative costs, high collateral security requirements and absence of experience within financial intermediaries. Easy availability of finance for SMEs can strengthen economic situations in developing countries by promoting innovation, and GDP growth.

Many country-level and microeconomic research have assessed the importance of SMEs in the economic development and industrialization process (Snodgrass and Biggs,1996), Beck et al. (2005) showed the relationship between small and medium scale enterprise and economic growth.

According to Ang (1991), every firm, whether small or big, is faced with financial constraints. For small and medium-size enterprises, challenges faced in accessing credit facilities are examples of these constraints. This concept and thought are in harmony with the Theory of

Constraints (TOC) by Cox and Goldratt (1986), though the idea began with Goldratt. The TOC is a management paradigm that views any manageable system, such as a firm, as being limited in accomplishing more of its objectives by a small number of constraints. No matter how small their number is, there is always at least one constraint.

The TOC is more of a remedial tool than a theory because it uses a focusing process to recognize the constraint and restructure the rest of the business around it. In terms of access to finance from financial institutions by SMEs, several challenges are faced. The initial step is the lack of infrastructure (Agyei, 2011; Gyamfi, 2012). This constraint will affect the growth of SMEs and their eligibility to access the finance from financial institutions. For example; a majority of SMEs in the study of Ahiabor (2013) did not have access to prerequisite infrastructure; hence they could not have access to substantial credit facilities.

This challenge also boils down to SMEs not having the right collateral securities for accessing credit facilities (Adjei, 2012). The main challenge faced by most SMEs has to do with poor skilled labour or lack of suitable skills (Agyei, 2012; Ahiabor, 2013).

Accessibility of finance to SMEs is rated as a significant constraint an identical proportion as economic policy uncertainty and corruption. Additionally, financing is one of the few characteristics of the business environment that collectively with crime and political uncertainty is robustly connected to firm growth, while other features have at most an indirect influence on firm growth (Maksimovic and Ayyagari, Demirgüç-Kunt, 2006).

Small firms frequently report larger financing hurdles than medium and large firms (Beck, Demirgüç-Kunt, Laeven and Maksimovic, 2006) smaller, younger and domestic- (as opposed to foreign-owned) firms report higher financing hurdles even after even after controlling for other firm characteristics. The relationship is also statistically significant. The probability that a small

firm list financing as a significant hurdle (as compared to moderate, minor or no obstacle) is 39% as opposed to 36% for medium-sized firms and 32% for large firms.

Quasi-natural experimental facts show the significance of credit constraints for firm growth. Banerjee and Duflo (2004) evaluated the loan details on 253 Indian SMEs' before and after they became eligible for a directed subsidized lending program and result of the study show that the additional credit has led to the same amount of increase in sales instead of replacement for other non-subsidized credit, showing that these firms were credit constrained before receiving subsidized credit.

Likewise, the study of Zia (2008) show that small non-listed and non-group firms in Pakistan minimize their sales after they become ineligible for the subsidized export credit, showing the existence of credit constraints; in comparison, large, listed and group firms do not reduce their sales after losing subsidized credit.

It should be emphasized that these facts do not support subsidized credit as a means to alleviate small firms' credit constraints. Both in the emerging and emerged markets small companies have been observed to have fewer accessibility to external financing and to be more restricted in their business and development (Berger and Udell, 1998; Galindo and Schiantarelli, 2003). The positive impact of financial and institutional development can also be noticed in the use of external finance.

Higher protection of Intellectual rights enhances external funding of small companies considerably more than it does for large firms, particularly due to the differential effect it has on fund providers (Beck et al., 2004b).

Blending firm-level data with indicators of national policies and institutions also assist analysts to evaluate the reasons for the missing middle phenomenon observed in several developing nations.

For example, Sleuwaegen and Goedhuys (2002) indicate that smaller firms grow reasonably quicker in Germany than in Coˆte d'Ivoire, while the contrary when it is compared to large firms.

3.7 Policies which makes SMEs difficult to access funds

Policies from the government which is also an important aspect, specifically market developing policies that will help push out the frontier,

Market-enabling policies that push incumbent and new financial institutions toward the present frontier and market-harnessing guidelines that prevent the monetary system to move beyond the frontier towards a point of financial fragility, some of these constraints are:

- The main objective of market-building policies is to improve the state variables and include reforms in the contractual and informational frameworks and macroeconomic performance. The results of such changes can take a long time in the financial system to reach a higher sustainable equilibrium and be able to provide SMEs with the necessary financial services in a commercially viable manner.

- Higher lending rates may indicate worries about financial solvency and a history of asset confiscation or uncertainty in estimating inflation rate, under this circumstances due to high lending rates and unstable financial condition it would be difficult for SMEs to access the funds. Under such situations, suitable policy measures are required to foster credit access to SMEs and to enhancing the fiscal solvency and at establishing a stable economy.

- Previous studies suggest good market condition and good financial position of the SMEs will encourage banks to maintain a long-term relationship with these firms as they know that they can regain their initial investment in the long run (Petersen and Rajan, 1995; Bonaccorsi di Patti and Dell'Ariccia, 2004).

However, many other studies highlighted the importance of healthy competition reflecting on firm's performance and subsequently positively affecting on accessibility of finance to SMEs (Cetorelli and Strahan, 2004; Beck, Demirgüç-Kunt and Maksimovic, 2004a).

Further, regulatory frameworks and government policies can affect the functioning of a monetary system through the ability to transfer collateral easily from one lender to another and the potential of SMEs to create the good reputation in maintaining good repayment track record. There is mixed evidence concerning the effect of foreign bank entry on SME lending.

On the other hand, company-survey facts indicate that companies record less financing hurdles in nations with a larger share of foreign banks, a finding that holds across different size groups of firms. (Clarke, Cull, and Martinez Peria, 2006). This favourable impact can be direct or an indirect. Foreign banks can provide the essential know-how and to bring in new transaction lending methods. By competing with domestic banks for large-scale undertakings, they can also push domestic banks to also extend their lending lower segments of corporate clients which are SMEs (de Haas and Naaborg, 2005).

- Government policies can play a significant role to drive the system in direction of the lending to SMEs. Regulatory policies that allow leasing and factoring – conventional SME lending solutions – have showcased noticeably on the agenda.

- Leasing is a desirable financing option for SMEs as it is dependent on the cash inflow of the financed fixed asset, like plant & machinery or vehicle, instead of track record of the business or the asset base of the business, it usually contains tax benefits, and it enables for simpler recovery if the right legal structure is in place. Factoring, the discounting of accounts receivables, is more beneficial for small suppliers of massive credit-worthy customers, as it does not depend on details about the "borrower", but instead on the obligor (Klapper, 2006).

- Either leasing or factoring depends on a legal structure regulating these transactions, but less dependent on the contractual structure of a nation, so that they can support a monetary system in the direction of lending to SME.

    Both transaction types can also advantage a lot from electronic registration systems and electronic security laws, which will enable electronic control and therefore lowering the transaction costs (Klapper, 2006, 2007).

    Loan classification and provisioning rules can also affect SMEs' access for funding, through less dependence on collateral security rather the focus should be on repayment track record from previous lenders.

3.7 Role of government: SMEs finance constraint

The various policies highlighted appear to call for a significant role of the government in the "SME-Access to Finance". But what precisely the role of governments is still a topic of debate. While analysis or research in this aspect can help the government to recognize which government interventions have not worked well and which have worked well. This will help the government to take necessary steps in order to overcome the hurdles in promoting the growth of SMEs and subsequently simplifying the accessibility of finance to SMEs.

    However, it is clear that the more research needs to be done in order to understand government intervention to improve the accessibility of financing to these SMEs. What functions in one nation, may not function in other nations; this could be because all internal and external factors which affect the regulatory and monetary policies of the individual nation (Honohan and Beck, 2007). To understand these situations government should intervene with necessary policy and regulatory framework to strengthen the growth of SMEs.

The government policies, where few policies may need the active participation of government in order to ensure successful implementation of the framed policy and also proper monitoring of these policies are required to ensure stable economic system.

The online system which enables the banks and other financial institutions to share the repayment track record of all the borrowers will also help these SMEs to build a good reputation in terms of repayment of the debt and subsequently will also encourage the lenders to extend the lending facilities to these SMEs.

3.8 Conclusion

The significance of access to credit for SMEs has been the focus of a vast literature. The most highlighted challenge faced by SMEs are lack of collateral security stringent lending criteria set by the bank; short loan repayment period; and lack of guarantors. Other constraints could be inflation; lack of adequate capital, the high-interest rate on loans and in the capital market and exchange rate fluctuation.

At the policy level, government policies of the country affect the financial institution framework and lending structure. That is, policies of the government influences the market shares and competitive conditions for small versus large firms, domestic versus foreign firms, and public versus private firms, and the information, legal, judicial, bankruptcy, social, tax, and regulatory surroundings in which these institutions operate (lending infrastructure).

These financial structures then help to identify the feasibility and profitability with which the different lending technologies can be used to fund SMEs. The structure of financial institution affects the deployment of technologies because the type of institution has an impact on comparative advantages on various lending technologies.

The lending infrastructure affects the legality and profitability of the lending technologies. The lending technologies have significant effects on the access to finance for creditworthy transparent and opaque SMEs. The various technologies – balance sheet lending, small business credit rating, asset-based lending, factoring, fixed-asset lending, leasing, relationship lending, and trade credit – each involves a distinct combination of the primary information source, assessing and underwriting policies/procedures, loan contract framework, and monitoring approaches/mechanisms.

The selection of lending technology for a particular creditworthy SME is dependent on the sources of information, as well as the adaptability and relevance of the several screenings, underwriting, contracting, and monitoring techniques dealing with the firm in its environment.

Chapter 4: Literature review and hypothesis

4.1 Introduction

Several reasons explain the expanding interest in understanding the determinants of high growth firm and predicting the growth of small and medium scale enterprises (SMEs), especially regarding high-growth firms. Many studies uphold that these firms are an important stimulus to the country's economy, are of high interest to policymakers and academicians because high growth reflects the firm success or market acceptance (Fesser and Willard, 1990). Identification of determinants of firm growth is of good desire to decision makers.

Analysing company performance using financial ratios has been a conventional yet effective instrument for decision-makers, which include financial analyst, managers and credit providers.

Rather than employing the total amounts observed on financial statements, these analyses were conducted using many financial ratios to obtain meaningful results. Ratio analysis can help stakeholders analyse the financial health of a company. Using these financial ratios, comparisons can be made across companies within an industry, between industries, or within a firm itself.

Liquidity ratios evaluate the ability of a company to pay a short-term debt, whereas long-term solvency ratios investigate how risky an investment in the firm could be for creditors. Profitability ratios examine the profit-generating ability of a firm based on sales, equity, and assets. Turnover ratios evaluate how efficiently the firm generates earnings through making use of its assets, collecting receivables, and disposing of its stocks. The primary goal of the research is to determine the factors which are efficient indicators and predictors of high-growth firms.

So, it is more interesting to find out what are the financial indicators affecting the growth of the firm in the subsequent year which is 2011. There is no specific approach for measuring firm growth throughout a period of analysis (Delmar et al., 2003).

The source of data was based on the financial reports, we have employed growth of sales, similar to the earlier study (Baum et al., 2001, Lumpkin and Dess, 2001). In the phrasing of this paper – the main objective of the study is to identify the efficient predictors of corporate growth.

The predictions of growth tested using a data of established firms of 11401 firms in Italy. Previous researchers focused on determining HGFs and comparing HGFs and non-high growth firm. The main contribution of the study is using an innovative model adopted in credit risk management to identify the predictors of firm's growth by using a Probit regression procedure. Specifically, this paper follows an approach related to Z-score model (Altman, 1968), which forecast the possibility of default by means of a linear combination of financial ratios that differentiate among two different groups of firms: bankrupt and nonbankrupt firms. Various ratios are taken out from the annual statements before the period of default.

This is consistent with the idea that the financial statement at a time (t-1) affects the financial statement at a time (t). The same thought is being used in the present study with the significant difference that the focus is towards firm growth rather firm default. Except for the work (Sampagnaro 2013; Megaravalli, A. 2017), this approach has certainly not been employed from the point of view of firm growth.

4.2 Firm growth and high-growth firms: Literature review

Storey (1994) provides an overview of the many factors considered by researcher's prior to1994 and concludes that among small firms, there are six factors of Significance: firm age, size, industry sector /markets, legal form, location and ownership. The Storey shows that firm age is inversely related to growth, that is older firms grow more slowly than younger firms. Size of the firm is another factor but one that is the source of some debate in economic theory (Gibrat 1931).

As already noted, empirical research has demonstrated that smaller firms grow at a greater rather than larger firms. However, Storey notes that Evans (1987) and Hall (1987) were the first to demonstrate that Gibrat's law did not hold for U.S. firm. A number of researchers have also started to argue that policies should be re-directed from promoting start-ups toward supporting potential HGFs. Birch's seminal work (1987) on the determining high growth firms, there has been a considerable attention in the determinants of HGFs both in the academia and policymakers.

It is clearly of interest to policymakers across many countries to nurture an adequate environment to sustain and more importantly foster the development of HGFs that create a disproportionally large amount of jobs (Storey 1994). Shane (2009, p. 141), for example, states that policymakers should "focus on the subset of businesses with growth potential." Mason and Brown (2013) argue that policies should be targeted toward supporting high-growth start-ups,

Many studies have upheld the fact that high growth firm is the one that creates more jobs in the net terms (Littunen and Tohmo 2003), and this high growth is an indicator of firm's success (Fischer and Reuber 2003). Mason and Brown (2013) suggest that regulators and policymakers should focus on promoting high-growth and start-up firms.

Based on the empirical study, HGF can be of any size, whereas small companies are overrepresented in the population of HGFs, large companies can also play an important role in creating the jobs (Berr, 2008; Coad et al. 2012). In the study of Megaravalli, A. (2017) indicated the financial ratios can be used as predictors of firm growth. Coad and H¨olzl (2009) do observe some persistence in the top tail of the growth distribution with small high-growth firms displaying negative autocorrelation, whereas large and established companies achieving smoother dynamics. Conversely, Capasso et al. (2013) Conclude that consistent outperformers are more often present among micro firms. Yet, other studies doubt the very existence of persistent high-growers. Daunfeldt & Halvarsson (2015) reveal that high growth firms are commonly "one-hit wonders", and results of the study reveal that those companies experiencing job losses in the specific period are most likely to become high-growth units in the next period.

The findings in Coad et.al (2014) confirm that most of the high-growth firms do not replicate their high-growth performance over time, and show that the degree of persistence might also depend upon the criterion adopted for the identification of growth for such companies. The result of numerous empirical studies shows that firm growth decreases with size (Geroski, 1995; Caves, 1998).

Previous studies on patterns of growth include market share, revenue from sales and services, employee growth, asset size (Ardishvili et al., 1998; Delmar, 1997).

Financial ratios are beneficial mainly (Ross, Westerfield, & Jordan, 2003):

- Providing information to creditors and suppliers;
- Evaluating competitive positions of rivals;
- Projecting the future by supplying historical information to existing or potential investors;

Other than the benefits provided above, financial ratios are also used for the purpose of predicting future performance. For example, they are used as inputs for empirical studies or are used to develop models to predict financial distress or failures (Altman, 1968; Beaver, 1966).

and presents a number of initiatives that policymakers can implement to actually generate and promote HGFs.

Table 3

Overview of firm growth review of selected studies

Author (Publication Year)	Title	Period (Country)	Sample	Important results
Evans (1987)	The connection between Firm growth, size and age: Estimations for 100 Manufacturing Sectors	1976 – 1980 (U.S.A)	100 manufacturing Industries	Probability of firm failure, firm growth and the variability of firm growth decrease as firm age and growth decreases at a diminishing rate with firm size
Lang, Ofck, Stulz (1996)	Leverage, investment, and firm growth.	1970– 1989 (U.S.A)	142 firms of different Industries	Study show a negative relation between leverage and growth
Stuart (2000)	Interorganizational Alliances and the performance of firms: A study of growth and innovation rates in a high – technological industry	1985 – 1991 (U.S.A)	150 Semiconductor firms	The findings of the study show that innovative firm alliance will perform better than a firm which lacks such alliance and this benefit is more to younger firms.
Hall, Sen (2001)	Study of R&D, innovation, and company performance in the Canadian biotechnology sector	1994 – 1997 (Canada)	74 biotechnology companies	The outcome of the study show that R&D showed association with patent measures and innovation is assessed with new product introduction is associated with firm performance.
Havnes, Senneseth, (2001)	Study of SMEs firm growth	1991- 1995 (8 European Countries)	1700 SMEs of five industry sectors	SMEs network maintained for 5 years did not show any evidence of short-term benefits like employment growth, total sales.

Table 3 (Continued)

Author (Publication Year)	Title	Period (Country)	Sample	Important results
Becchetti and Trovato (2002)	Determining SMEs growth	1989 – 1997 (Italian Firms)	4000 Italian firms	The result of the study shows that bank centred financial structure in Italy has a significant role on firm growth. Small surviving firms have above average growth but these firms have scarce availability of external finance and lack of access to foreign markets.
Davidsson, Kirchhoff, Hatemi-J and Gustavsson, (2002)	Empirical Analysis of Business Growth Factors Using Swedish Data	1987 – 1996 (USA, German, Australian & Scottish)	11,196 manufacturing firms	The findings of the study show that firm age, firm size, ownership form, legal form & industrial sector are most significant factors of growth across industries.
Delmar, Davidsson and Gartner (2003)	Arriving at the high-growth firm	1987 – 1996 (Sweden)	11,748 firms	The findings of the study show that identifying high growth firms depends on the measurements used and growth can be achieved in many ways.

Table 3 (Continued)

Author (Publication Year)	Title	Period (Country)	Sample	Important results
Yasuda (2005)	Firm Growth, Size, Age and Behaviour in Japanese Manufacturing	Survey of 1992 & 1998 (Japan)	14,000 Japanese manufacturing firms	The result of the study show that firm size and age have negative firm growth. R&D expenditure has the positive effect on firm growth.
Barringer, Jones and Neubaum (2005)	A quantitative content analysis of the characteristics of rapid-growth firms and their founders	Randomly selected case studies (USA)	100 firms	The study adds to the conceptual model for the attributes of high growth firms in 4 areas: Entrepreneur characteristics, attributes of the firm, firm's practices and practices of human resource management.
Moreno and Casillas (2007)	High-growth SMEs versus non-high-growth SMEs: a discriminant analysis	1998 – 2001 (Spain)	6692 SMEs in Spain	The result of the study shows high growth firm is different than declining or moderate growth firms because of firms smaller in size
Davidsson, Steffens, Fitzsimmons (2008)	Growing profitable or growing from profits: Putting the horse in front of the cart?	1995 – 1998 (Australia & Sweden)	Between 3488 and 3717 for Australian, 2455 for Swedish firms	The outcome of the study suggests that firm with high growth/profitability are more likely because of higher profitability
Cassia, Cogliati, Paleari (2009)	Hyper growth among European SMEs: an explorative study	1998 – 2006 (EU)	243,465 firms	The result of the study show that hyper growth firms are more likely younger firms and strong negative association between firm age and growth and these firms are more involved in mergers & acquisition and listing

Table 3 (Continued)

Author (Publication Year)	Title	Period (Country)	Sample	Important results
Sampagnaro (2013)	Predicting rapid growth SMEs through a reversal credit scoring principle	2003 – 2007 (Italy)	21,182 manufacturing firms	The outcome of the study show that internal cash flows, non-financial debt and firm size have an important role on firm success and growth.
Jun Du and Temouri (2015)	High growth firms and productivity: evidence from United Kingdom	2001 – 2010 (UK)	26,313 firms	The result of the study show that manufacturing and service sector firms are more likely to be high growth firm when they achieve higher total factor productivity
Coad et. al (2016)	Predicting new venture survival and growth: Does the fog lift?	2004 – 2014 (UK)	6579 firms	The result of the study shows the ability to predict firm growth deteriorates in the years after entry—in terms of the selection environment, the 'fog' seems to thicken.
Megaravalli, A (2017)	Estimating growth of SMEs using logit model: Evidence from manufacturing companies in Italy	2010 -2014 (Italy)	8232 manufacturing firms	The result of the study shows that return on asset, cash flow and inventory are positively associated with firm growth

Table 3 (Continued)

Author (Publication Year)	Title	Period (Country)	Sample	Important results
Wang, Y., (2016)	What are the biggest obstacles to growth of SMEs in developing countries? – An empirical from an enterprise survey	2006 – 2014 (Cross country data)	Firm level survey conducted through 130,000 firms in 135 countries	The outcome of the study shows that SMEs access to finance is one of the most significant obstacles which prevents the growth and key determinants of firm's characteristics are firm size, firm age, ownership and firm growth
Fernández .et.al .,(2017)	Firm growth in Europe: an overview based on the CompNet labour module	1995-2012 (Cross country data)	The CompNet dataset which includes 13-euro area, across 17 EU countries	The result of the study shows that percentage of shrinking firms increased in countries during their economic slowdown, while the growth of the firm slowed down in non-stressed nations.
Lee, N., (2014)	What holds back high-growth firms? Evidence from UK SMEs	UK	4858 UK SMEs	The results of the study suggest that high-growth firms experience challenges in six areas: recruitment, skill shortages, obtaining finance, cash flow, management skills and finding suitable premises.
Moreira, D. F., (2016)	The microeconomic impact on growth of SMEs when access to finance widens: evidence from internet & high-tech industry	(Western and Eastern Europe)	1327 SMEs in Europe	The result of the study shows that an increase in credit accessibility supported by improved governmental European legislation for SMEs may significantly promote the growth, wealth, and employment rates in Europe.

Many studies have upheld the fact that high growth firm is the ones that creates more jobs in the net terms (Littunen and Tohmo 2003), and this high growth is an indicator of firm's success (Fisher and Reuber 2003). Mason and Brown (2013) suggest that regulators and policymakers should focus on promoting high-growth and start-up firms. Based on the empirical study, HGF can be of any size, whereas small companies are overrepresented in the population of HGFs, large companies can also play an important role in creating the jobs (Berr, 2008; Coad et al. 2012).

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The findings in Coad et.al (2014) confirm that most of the high-growth firms do not replicate their high-growth performance over time, and show that the degree of persistence might also depend upon the criterion adopted for the identification of growth for such companies. The result of numerous empirical studies shows that firm growth decreases with size (Geroski, 1995; Caves, 1998).

High growth firms are not only instrumental in the research field of entrepreneurship and innovation but have also become a major concern among policymakers due to their proven impact on economic growth (Henrekson & Johansson, 2008).

The study by Barringer, Jones and Neubaum (2005) found that the characteristics of the founder of a firm, along with a firm's attributes, business practices, and human resources management practices, are important in helping a firm achieve rapid growth. The results of the study draw attention to the importance of human resource management practices in facilitating rapid growth as several variables not considered in the rapid-growth literature.

First, emphasis on training was found to be much more prevalent in rapid-growth firms as it was mentioned twice as often in the fast-growth narratives. Second, a clear distinction emerged in our content analysis in the reliance on different incentive systems within rapid-growth and slow-growth firms. In fact, the majority of the recent studies focused on analysing and potentially predicting bankruptcy as a means to identify characteristics (in term of financial ratios) of good or bad-performing firms and their potential values (Kumar & Ravi, 2007).

Cinca et al. (2005) proved that the size of the company and the country where the company is located impact the financial ratio structure. Most of the previous studies compare rapid-growth firms with low growth firms on a number of important dimensions, regarding founder characteristics (Barringer et al. 2005). Few studies focus on how firms have achieved high growth by studying the growth patterns of the firm (Delmar, 2003). Similarly, few studies focus on firm growth and its relationship to firm age, firm size, R&D (Yasuda, 2005, Evans, 1987, Yang et al. 2005). Yet, other studies focus on analysing the main variables distinguishing between high-growth firms and non-high growth firms and predicting the firm growth using balance-sheet ratios (Sampagnaro, 2013, Megaravalli, A. 2017).

In this study, maximum likelihood procedure has been used to develop the prediction model to discover the important financial ratios which have the strongest impact on predicting firm growth.

4.4 Determinants of firm growth

The major share of the academic research within the field of firm growth is dedicated towards the driving factors and determinants of firm growth. These studies consider firm growth as a dependent variable and hence as an outcome of certain factors. To analyse the influences of firm growth, it is first necessary to understand these driving factors behind it. Hence, this section illustrates the underlying drivers by first discussing the determinants of firm growth and subsequently exemplifying the driving factors behind firm growth. The determinants of firm growth can be classified as follows:

1) Firm-Internal Determinants

Academics put much research effort into investigating the firm-internal determinants of firm growth. In the following, the most relevant firm-internal determinants of firm growth are introduced and discussed in detail. These firm-internal driving factors can be classified into firm-structure-related, financial, personnel, strategic, and other determinants.

The first and probably the academically most studied driving factor of firm growth is the size of a firm. Several researchers have put much effort into investigating the role of firm size as a determinant of firm growth (Cabral & Mata, 2003). Firm growth and thus firm size is considered to be limitless. Only the respective growth rate may be restricted in the short run (Penrose, 1995). This idea of unlimited growth raised the interest of researchers into the relationship between the size and the growth rate of a firm.

A negative relation between size and growth would question the idea of unlimited firm size and thus result in a point at which further increases in size are impossible for a company (Hermelo & Vassolo, 2007).

The discussion of firm size as a determinant of firm growth is primarily based on the seminal article of Gibrat (1931). Gibrat's law of proportionate effect states that a company's growth rate in a specific time interval is the same for all companies independent of their size at the start of the time interval and is based on the discovery of the lognormal distribution of French manufacturing companies (Mansfield, 1962).

Consequently, a firm's growth rate can be considered as stochastic and random (Coad & Hölzl, 2012). In contrast to the independence of firm size and growth proposed by Gibrat, some theoretical considerations assume a relationship between firm size and firm growth. For some theorists, larger companies are characterized by a higher level of bureaucracy in comparison to smaller companies. Companies that are more bureaucratic are supposed to be less flexible in exploiting growth opportunities resulting in lower growth rates for larger firms (Haveman, 1993). In contrast to this inverse relationship, some academics assume firm size to be a positive driver firm growth. Large companies possess more underused resources than small companies helping them to better manage volatile environments and act on chance resulting in higher firm growth (Chandy & Tellis, 1998).

However, primarily the formulation of Gibrat's hypothesis resulted in a large variety of studies empirically analyzing the relationship between firm size and firm growth. The early analyses, primarily focusing on samples comprising large companies due to data availability, show a positive relationship between firm size and firm growth.

Larger companies feature higher growth rates and thus contradict Gibrat's hypothesis of independence between size and growth (P. Hart, 1962; Samuels, 1965; Singh & Whittington, 1975). In contrast to these early studies, the majority of succeeding publications identified a negative relationship between firm size and growth. This reverse relationship and thus the role of firm size as a determinant of firm growth has been proven by several studies across different regions, company sizes, and sectors.

Among studies analyzing large companies, Kumar (1985) and P. Dunne and Hughes (1994) identified the reverse effect for United Kingdom (UK) manufacturing firms, whereas B. H. Hall (1988) and Bottazzi, Dosi, Lippi, Pammolli, and Riccaboni (2001) as well as Goddard, Wilson, and Blandon (2002) found similar evidence for US and Japanese manufacturing companies, respectively. Droucopoulos (1983) analyzing more than 500 of the world's largest firms and Audretsch, Klomp, Santarelli, and Thurik (2004) examining small Dutch service companies did not find any significant link between firm size and firm growth and thus an indirect confirmation of Gibrat's hypothesis.

Furthermore, some researchers found evidence of Gibrat's law is valid for companies exceeding a certain size threshold, whereas for small companies the law is rejected and size and growth are found to be negatively related (Geroski & Gugler, 2004; P. E. Hart & Oulton, 1996; Mowery, 1983). Mansfield (1962) describes this threshold as a minimum efficient scale. The minimum efficient scale is the firm size up to which unit costs decrease substantially and only improve marginally above. In conclusion, the majority of empirical studies observe a negative relationship between firm size and firm growth resulting in a rejection of Gibrat's hypothesis.

Consequently, firm size can be regarded as a determinant of a firm's growth rate. In addition and closely related to firm size, the role of firm age as a determinant of its growth rate has as well been analyzed intensely by researchers. Firm size and firm age are two strongly interlinked factors (Coad, 2007).

On occasion, firm age and firm size are equally used to embody the same phenomenon (Greiner, 1972). Regarding the influence of firm age on firm growth, different theoretical concepts exist. Among the most relevant theories, learn theoretical models postulate a negative relationship between age and growth.

Firms are involved in a continuous learning process about their relative efficiency within their respective market. Efficient companies increase production and thus grow. However, the returns from the learning process decrease from year to year resulting in smaller efficiency improvements and thus less growth over time. Several academic studies empirically analyzed the role of age as a determinant of growth. Among those studies, the majority found a significantly negative relationship between both parameters. For small companies, age as an inverse determinant of growth was confirmed in France (Fizaine, 1968) and the US (T. Dunne, Roberts, & Samuelson, 1989).

On a firm-level, the negative relationship was proven for US manufacturing companies (Evans, 1987a, 1987b), US service companies (Variyam & Kraybill, 1992), and large European firms (Geroski & Gugler, 2004). In contrast to this negative relationship, Das (1995) observes a positive relationship between growth and age. Additionally, Barron et al. (1994) identify an unsteady relationship between age and growth showing the highest growth rates for the youngest firms, the second highest growth rates for the oldest firms, and the lowest growth rates for mid-age firms.

In conclusion, the majority of empirical studies observe a negative relationship between firm age and firm growth supporting the learn-theoretical concepts. Consequently, an indication exists of firm age being a determinant of the respective growth rate of a company.

Contrarily, a legal form with limited liability caps the accountability of managers in a failure scenario. Consequently, legal forms with a limited liability incentivize managers to conduct investments with associated higher returns as wells as higher risks of failure (Stiglitz & Weiss, 1981). Thus, companies operating under a legal form with limited liability for the management are assumed to experience higher growth rates in comparison to companies with unlimited liability.

However, this advantage in terms of higher growth rates is accompanied by higher exit probabilities. In addition to the liability of the managers, the legal form of a company influences its access to financing sources and thus indirectly affects a firm's growth rate. Academics empirically analysed the role of the legal form as a determinant of firm growth. Harhoff et al. (1998), empirically examining Western German firms, found evidence of higher growth rates for companies with a legal form involving limited liability. Additionally, their sample indicated a higher probability of exit for these companies.

Furthermore, Companies with a legally limited management are more likely to experience higher firm growth according to the results of this study. Summarizing, the few empirical studies conducted indicate the legal form of a company to be a determinant of firm growth rates. However, this determinant is assumed to be more relevant for small-scale and private companies, since legal forms with limited liability are not or less frequently used among large scale and listed companies.

a) **Firm-Structure Determinants**

The first and probably the academically most studied driving factor of firm growth is the size of a firm. Several researchers have put much effort into investigating the role of firm size as a determinant of firm growth (Cabral & Mata, 2003). Firm growth and thus firm size is considered to be limitless. Only the respective growth rate may be restricted in the short run (Penrose, 1995). This idea of unlimited growth raised the interest of researchers into the relationship between the size and the growth rate of a firm. A negative relation between size and growth would question the idea of unlimited firm size and thus result in a point at which further increases in size are impossible for a company (Hermelo & Vassolo, 2007).

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In contrast to the independence of firm size and growth proposed by Gibrat, some theoretical considerations assume a relationship between firm size and firm growth. For some theorists, larger companies are characterized by a higher level of bureaucracy in comparison to smaller companies. Companies that are more bureaucratic are supposed to be less flexible in exploiting growth opportunities resulting in lower growth rates for larger firms (Haveman, 1993).

However, primarily the formulation of Gibrat's hypothesis resulted in a large variety of studies empirically analyzing the relationship between firm size and firm growth. The early analyses, primarily focusing on samples comprising large company's due to data availability, show a positive relationship between firm size and firm growth. Larger companies feature higher growth rates and thus contradict Gibrat's hypothesis of independence between size and growth (P. Hart, 1962; Samuels, 1965; Singh & Whittington, 1975).

This reverse relationship and thus the role of firm size as a determinant of firm growth has been proven by several studies across different regions, company sizes, and sectors. Among studies analyzing large companies, Kumar (1985) and P. Dunne and Hughes (1994) identified the reverse effect for United Kingdom (UK) manufacturing firms, whereas B. H. Hall (1988) and Bottazzi, Dosi, Lippi, Pammolli, and Riccaboni (2001) as well as Goddard, Wilson, and Blandon (2002) found similar evidence for US and Japanese manufacturing companies, respectively.

Whereas most of the previous studies focused on manufacturing companies, Variyam and Kraybill (1992) and Johnson, Conway, and Kattuman (1999) proved smaller growth rates for larger firms in the service sector as well. Higher growth rates for smaller firms were also confirmed by Barron, West, and Hannan (1994) in the financial service industry, C. R. Weiss (1998) in the farming industry, and Bottazzi and Secchi (2005) in the pharmaceutical industry and thus across different industrial sectors.

In addition to these studies indicating a significant relationship between firm size and firm growth, a little number of studies does not find a significant influence of size on growth and thus confirm the theory behind Gibrat's law.

Droucopoulos (1983) analyzing more than 500 of the world's largest firms and Audretsch, Klomp, Santarelli, and Thurik (2004) examining small Dutch service companies did not find any significant link between firm size and firm growth and thus an indirect confirmation of Gibrat's hypothesis.

Furthermore, some researchers found evidence of Gibrat's law is valid for companies exceeding a certain size threshold, whereas for small companies the law is rejected and size and growth are found to be negatively related (Geroski & Gugler, 2004; P. E. Hart & Oulton, 1996; Mowery, 1983). Mansfield (1962) describes this threshold as a minimum efficient scale. The minimum efficient scale is the firm size up to which unit costs decrease substantially and only improve marginally above. In conclusion, the majority of empirical studies observe a negative relationship between firm size and firm growth resulting in a rejection of Gibrat's hypothesis. Consequently, firm size can be regarded as a determinant of a firm's growth rate.

Regarding the influence of firm age on firm growth, different theoretical concepts exist. Among the most relevant theories, learn-theoretical models postulate a negative relationship between age and growth. Firms are involved in a continuous learning process about their relative efficiency within their respective market. Efficient companies increase production and thus grow. However, the returns from the learning process decrease from year to year resulting in smaller efficiency improvements and thus less growth over time.

b) **Financial determinants**

Financial capital is among the most analyzed determinants of firm growth (A. C. Cooper, Gimeno Gimeno-Gascon, & Woo, 1994; Gilbert, McDougall, & Audretsch, 2006). Referring to financial capital as a determinant of firm growth, two dimensions are of relevance: a firm's financial performance on the one hand and its access to external financing on the other hand.

Although the access to external financing may be considered as an external determinant, it is decided to discuss this factor in this part of the thesis, as financial performance and financing access are closely related. Generally, a firm may finance additional resources by retained earnings, the issuance of equity, or the borrowing of debt (Brealey, Myers, & Allen, 2011). A firm's financial performance may influence its growth in an internal as well as an external way. Internally, higher performance enables companies to faster invest in additional resources and capture growth opportunities.

Externally, high levels of profitability or further performance measures increase a firm's attractiveness to external capital providers, both equity and debt, and thus are assumed to have a positive influence on their access to external financing (Chen, Babb, & Schrader, 1985). Additionally, a low debt-to-equity ratio also referred to as leverage ratio, may increase a company's attractiveness to potential investors and thus increase its access to external financing (Hermelo & Vassolo, 2007).

Becchetti and Trovato (2002) found no evidence for the influence of the leverage ratio on firm growth. However, a qualitative variable approximating creditworthiness was confirmed to be an important factor driving firm growth. Furthermore, Hermelo and Vassolo (2007) found a significantly positive relationship between financial resources of a company and growth analyzing firms from Argentina. Coad (2007) identified a positive and statistically significant influence of profitability on growth for French manufacturing companies. However, due to a low magnitude of the coefficient, the author argues to treat a firm's profitability and its rate of growth as independent parameters. These findings are in line with the results of Bottazzi, Secchi, and Tamagni (2007).

Summarizing, empirical studies analyzing the importance of financial performance and access to capital on firm growth show a mixed picture. Whereas Coad (2007) defines financial performance as a minor determinant of firm growth, Davidsson et al. (2010) recognize the complexity between both parameters and thus refrain from a conclusive statement on the role of financing as a driving factor of firm growth.

c) Strategic determinants

Furthermore, determinants related to a company's strategy are assumed to affect its rate of growth (Weinzimmer, 2000). Several researchers illustrated the importance of strategy for the success of a company (Feeser & Willard, 1990; Grinyer, McKiernan, & Yasai- Ardekani, 1988). The major strategic determinants of firm growth refer to the corporate or portfolio strategy of a company, a firm's business strategy, the level of diversification, and the level of internationalization of a company

The level of diversification and internationalization of a company is closely related to its corporate strategy. The definition of firm diversification goes back to Ansoff (1957). Two general diversification modes are defined in this article: diversification into new markets and diversification into new products. However, only in case of a simultaneous implementation of both diversification modes Ansoff refers to a diversification strategy of a company. This perspective on diversification is shared by additional academics (Chandler Jr, 1990). Consequently, several researchers refer to the level of diversification of a company as the number of different industries or markets a firm competes in and the corresponding sales shares it achieves in these different industries or markets, respectively (P. G. Berger & Ofek, 1995; Jacquemin & Berry, 1979).

In general, three typologies of diversification exist: (1) related or unrelated diversification referring to the similarity of industries a company is active in, (2) conglomerate, vertical, or horizontal diversification referring to the direction along the value chain, and (3) international and domestic diversification referring to the number of countries or regions covered by a company (M. Weiss, 2009). A high level of diversification is believed to enable companies to attract a larger number of customers and to decrease volatility in sales resulting in higher sales growth rates on average (Hermelo & Vassolo, 2007).

d) Other firm-internal determinants

Companies engage in several relationships with other organizational entities, e.g., their customers, their suppliers, or financial institutions (Park & Luo, 2001). Being part of professional networks brings several advantages to companies. First, firms are able to obtain important resources from these networks, e.g., capital, goods and services, or specific information. Secondly, companies minimize the number of transactions by sharing information and norm development within their networks.

Thirdly, by establishing entry barriers to key suppliers, companies defend their supplier base from competitors (DeBresson & Amesse, 1991; Zaheer, Gulati, & Nohria, 2000). Based on these advantages, a company's professional network can be regarded as an asset of strategic importance. This strategic asset enables companies to more effectively develop new products and faster respond to market developments resulting in higher firm growth (R. P. Lee, Johnson, & Grewal, 2008). Companies engaged in professional networking activities have a higher probability of firm growth and survival (Brüderl & Preisendörfer, 1998; Dubini & Aldrich, 1991).

R&D comprises all activities within a firm aiming at the development of new services and products (Scherer, 1965). Innovation is, under certain circumstances, a key component in generating a competitive advantage (Lengnick-Hall, 1992). Thus, R&D is considered as an important organizational capability based on its knowledge generation role resulting in new products and services and ultimately in stronger firm performance (Geroski, 1989; Stremersch & Tellis, 2004).

This high-profile role of innovation is reflected by its perception among executives. Owners, as well as managers, regard innovation as a key vehicle to drive firm growth. In a survey focusing on small and medium enterprises (SME) across several industries, executives name the innovation of new products as their predominant strategic initiative to drive growth (Hay & Kamshad, 1994). Similarly, executives of large-scale companies define innovation as an elementary factor to further drive growth (Carden, Mendonca, & havers, 2005).

2) Firm external determinants

Firm external determinants include industry or market-related determinants are introduced followed by additional firm-external drivers of firm growth.

a) Industry or Market Determinants

Empirical studies confirmed the theory of a positive relationship between the growth rate of an industry and the growth of the individual firms of this industry. This is due to several factors, e.g., higher availability of business opportunities or less intense rivalry (McDougall, Covin, Robinson, & Herron, 1994; Porter, 1980). Audretsch and Mahmood (1994) as well as Audretsch (1995) found evidence for the industry growth rate to be a positive and significant determinant of the growth rate of individual companies across varying industries and time frames.

Similarly, Capon et al. (1990) found industry growth rates to be a positive and significant indicator of firm growth. In addition to the respective growth rate of a market or industry, the competition intensity, the level of munificence, the degree of dynamism, and the level of complexity are considered as determinants of firm growth rates (Bahadir et al., 2009; Davidsson et al., 2010).

First, the competition intensity of an industry often refers to the number and size of competitors (Hermelo & Vassolo, 2007). In general, higher competition, e.g., represented by larger competitors, is assumed to negatively affect the growth of firms (Porter, 1980). Thus, intensified competition results in lower individual firm growth rates (Bahadir et al., 2009). However, some empirical studies indicate the opposite effects of increased competition. In some cases, firms competing in highly competitive industries were found to experience higher growth rates (Birley & Westhead, 1990; Capelleras & Rabetino, 2008).

These results are partially explained by the fact that companies favourably participate in markets characterized by a high-level attractiveness. However, due to their superior attractiveness, these markets simultaneously experience a high degree of competition (Hermelo & Vassolo, 2007). As a second market characteristic, the level of munificence within an industry refers to the environmental resource availability enabling firm growth (Dess & Beard, 1984). A high level of munificence supports companies to address challenges by utilizing these external resources. Empirical analysis of the significance of munificence for firm growth is ambiguous. The majority of researchers found a positive relationship between resource availability and firm growth (Bahadir et al., 2009; Rajan & Zingales, 1996). However, contrary results exist as well (J. R. Baum et al., 2001).

b) Other firm's external determinant

Companies operate in a set comprising several factors and forces influencing their business activity. These factors, e.g., the gross domestic product (GDP) growth, the monetary policy, or the balance of payments situations, are considered to influence the business opportunities available to companies and thus substantially determine their growth paths (Fernando, 2011). A variety of studies analyzed the influence of macroeconomic factors on firm growth performance. By analyzing US companies covering the business cycle from 1950 to 1999, Higson, Holly, and Kattuman (2002) found the average growth rates of a company to be influenced by the macroeconomic environment, e.g., the GDP growth of the US. Contrarily, Gabe and Kraybill (2002) did not find any statistically significant relationship between regional growth rates and individual firm growth. Furthermore, Beck et al. (2005) identified several economic indicators to drive firm growth.

By analyzing 4000 companies in 54 countries, the rate of inflation, as well as the rate of GDP growth, are positive indicators of firm growth. Hardwick and Adams (2002) found differences of the influence of macroeconomic factors as growth determinants across firm sizes. Whereas small firms outperform larger firms in terms of growth in times of high economic growth, larger firms show higher growth rates in times of low and negative GDP growth. As a further factor, Demirgüç-Kunt and Maksimovic (1998) analyzed the role of the financial as well as the legal system of a country as determinants of individual firm growth. The development of the financial market of a country is an indicator of its economic growth performance (Beck & Levine, 2004; Levine & Zervos, 1998).

As previously discussed, economic growth was considered as a predictor of individual firm growth. On the one hand, well-developed financial markets act as a capital source for companies and on the other hand provide investors with information about companies. Thus,

well-developed financial markets should have a positive impact on firms' ability to access long-term funding and thus influence their rates of growth (Diamond, 1993; Holmstrom & Tirole,1993). This theory is closely related to a firm's financial resources as a determinant of firm growth as previously discussed.

4.4 Hypothesis

4.4.1 Profitability

Making profit is one of the ultimate goals of any economic activity. Profit can be measured by return on equity (ROA), which is calculated by dividing net income by average total assets. Return on assets (ROA) shows the profitability of the company when compared to its total assets.

ROA shows the efficiency of the firm in utilising its assets to a maximum extent and subsequently generating profits. Although there are other profit measures available, we prefer to use return on asset (ROA) as this is one of the most common measures of profitability in finance.

Profitability and return on asset (ROA) determine the long-term growth prospects of a company. A high return on asset creates a scope to investment and good investments lead to accelerated growth. Although it is not essential for a firm to reinvest its profits, we assume that all firms at least reinvest a small proportion of its profits. Some firms may prefer to retain profits in the form of retained earnings or can distribute to shareholders in the form of dividends. We assume that an increase in investment budget will conform to the profitability. In what follows, different previous works are quoted to see whether the concept of conformity in investment budgets is working for the relationship between profitability and firm growth. Interestingly, the theoretical connection between firm growth and profitability is not clear and has not been the topic of persistence in a scientific study (Coad & Hölzl, 2010).

Goddard, Molyneux & Wilson (2004) are of the opinion that the theoretical belief of firm performance and growth is not observed in reality. As per their studies, company's profitability and growth are not essentially connected to each other. Furthermore, several research studies validate the issues of Goddard and his co-writers (Coad, 2007). The main concerns are as follows:

- The impact and direction of the relationship between growth and profitability are ambiguous.

- It is difficult to control the endogenous effect of a lag term on growth in a simple autoregressive model (Goddard et al., 2004).

- The most commonly used panel unit-root test in previous studies cannot directly examine the inter-relationship between firm growth and profitability (Davidsson, Steffens & Fitzsimmons, 2009).

Jang & Park (2011) had the goal to solve the problem of the shortcomings of the panel unit-root test. By using an improved testing, they were able to improve the empirical section of previous studies. The authors used a combination of panel unit-root test and a dynamic GMM estimator on a sample of restaurant firms.

This finding is consistent with Alchian's theory of the firm, which also believes that fitter firms will survive and grow, while the less fitter will disappear (Alchian, 1950). Here, the degree of fitness is synonymous with profitability and the rate of success or survivability stands for growth. Additionally, the financing constraint theory and the pecking order theory confirm the findings of Jang & Park.

The financing constraint theory (Goldratt, 1990) argues that firms which do not make the profit and thus does not have a buffer to invest, will not be able to finance their growth or at least their sustainability, and will finally disappear. Here, the buffer is the retained earnings, which will be small if the company does not make a profit or decides to allocate all of its profit to the shareholders.

This buffer equals to the internal capital, which is preferred to external capital according to the pecking order theory. The theory of Penrose (1959) adds the concept of managerial impact to the relationship between profitability and growth. The capability and the interest in maximizing the profitability will determine the devotion of growing. Glancey (1998) was interested in the practical value of Penrose's arguments and found a positive correlation between the profitability and growth. The research by Glancey undertook a sample of small owner-managed firms. Chandler & Jansen (1992) found a significant positive correlation between sales growth and profit. Mendelson (2000) and Cowling (2004) reported the same conclusion. Capon, Farley & Hoenig (1990) study show that firm growth is connected to high financial efficiency, but it was only significant in some of the sectors.

Gupta (1981) agrees with this thinking as he shows in his concept of scale economies that growth helps to increase the size of the firm, which in turn helps to make more profit. The argument that larger firms will make more profit is consistent with the advantages of economies of scale. A minority group of authors claimed an inverse relationship between profitability and growth. Reid (1995) claimed that growth had a negative impact on profitability. Dobson & Gerrard (1989) used an alternative OLS method to research the same.

They found a significant negative relationship between growth and profitability.

The findings of Reid and the colleagues Dobson & Gerrard are consistent with a number of theories:

- Classical Ricardian Theory

- Neoclassical Theory

- The managerial growth maximization theory

The first Ricardian Theory (1817) takes growth into account as a discouraging factor for profitability. The more profit a company makes, the more it wants to grow with plausible less profitable projects. The greed to grow more will lead to less money generating and more money wasting projects. This logic leads to a lot more growth, but fewer profit, which is not sustainable for the firm. The Neoclassical Theory tells the similar story but utilizes a different storyline. As per which initially the profits will go up and down which will be dependent as per the growth opportunities.

The last theory of growth maximization has been argued by Marris and Mueller (Marris, 1964; Mueller, 1972). These two authors placed growth in a competitive relationship with profitability. The objection of the managers is to maximize growth rather than profit and this may lead to a pessimistic scenario for the profitability.

In the literature, there is even evidence of impartial findings. As such, Markman & Gartner (2002) reported none significant relationship between growth and profitability.

We, however, believe in most of the academic proof and we are thus examining the validity of the boosting effect of profitability on sales growth. We, therefore formulate the following hypothesis:

Hypothesis 1: Profitability has a positive impact on firm growth

This assumption is also consistent with theoretical literature and Kaldor and Verdoorn's Law in economics (Kaldor, 1966; Verdoorn, 1949). According to this law, the growth is the engine of the productivity and the productivity is the motor of profitability.

4.3.2 Liquidity

The next determinant concerns the idea that companies will grow faster if they hold a sustained level of current assets to pay off their short-term liabilities. Mateev & Anastasov (2010) measured the level of short-term liquidity by the current ratio. This ratio was part of the firm specific characteristics, which may affect the company growth. The current ratio is calculated by dividing the current assets by the current liabilities. An increase in the current ratio will reinforce a firm's liquidity position. Companies with a lower level of liquidity will have more cash constraints and will have more difficulties in repaying suppliers. A good cash cycle begins with the healthy working capital and good relationships with suppliers (Beekman & Robinson, 2004). A company that is not able to hold a certain level of liquidity will struggle to keep its head above water.

Cash is an important part of current assets and determines the level of short-term liquidity. A company with a sustained level of cash will trade the surplus cash and will make interest on it. If this activity holds year by year, a certain amount serves as a cash buffer. This cash buffer can be used as investment capital or as cash guarantees (e.g. to take a bank loan). The usage of the first opportunity (investment capital) makes it possible for a firm to invest, which is always better than having a shortage of money.

The bigger the cash buffer, the more growth opportunities to consider.

Moreover, Anderson (2002) expressed in his working paper, published by the National Bank of Belgium, similar beliefs about holding liquid assets. Therefore, we expect that liquidity has a positive impact on firm growth.

Hypothesis 2: liquidity has a positive impact on firm growth

However, Gill & Mathur (2011) expect that firms that can maintain higher liquidity levels will face less severe financing constraints. Surplus cash will shrink financing constraints, enabling the company to finance growth opportunities at a lower cost. Logically, a company that can invest at a reduced cost, will be more motivated to invest, aiming for growth. As such, a data mining technique namely decision tree induction used by Limère, Laveren & Van Hoof (2004) proved that increased growth ambitions will finally strengthen the growth.

4.3.3 Solvency

The solvency of a company indicates its health. The solvency ratio is calculated by dividing shareholders' equity by the total assets. The bigger this ratio, the healthier a company is. A company with a small solvency ratio has little shareholders' equity compared to its liabilities. A company facing this situation has a higher risk of bankruptcy than a company which has a healthy ratio. When discussing the solvency and growth hypothesis, much attention will be paid to the theory of Myers & Majluf (1984), better known as the pecking order theory. According to them, a company manager will first use retained earnings as input for investments and will borrow at the next stage.

If the company is in its first stage, the manager will choose to invest using the retained earnings in order to grow. This means that the internal financing will continue until the retained earnings reach the amount of zero. As such, the nominator of the solvency ratio will decline. Subsequently, the solvency will cut down, describing the negative association between solvency and growth. This thinking is however oversimplified because a change in the numerator will affect the denominator and the same applies vice versa. Still, a bigger concern is restricting the logical thinking to the first growth stage, as according to the famous growth model, there are many more stages of growth (Churchill & Lewis, 1983). Nevertheless, 98% of Belgian companies are SMEs1 (Verbakel, 2005). Most of SMEs are still in their early growth phase, whereby the latter concern is rectified. Therefore, a negative relationship between solvency and firm growth is to be expected.

Hypothesis 3: Solvency has a negative impact on firm growth

Furthermore, as mentioned earlier, Durinck et al. (1997) show that the faster the growth, Chances will be higher that firms will use external financing. This rise in external funding is primarily through an raise in the liabilities, as the increase in external equity funding was not observed significantly.

While some of these surveys (Buttignon and De Leo, 1994; Bigelli et al., 2001) clearly show the preference for retained earnings over external funds when firms finance new investments, others stress the importance of both the Pecking order theory and trade-off theory in explaining the features of capital structure (Bontempi, 2002; Bonato et al.,1993); In particular, there is a prevalence of small and medium unlisted firms, with a very high degree of ownership

concentration, and rely almost exclusively on debt as an external source of financing as opposed to equity (Tajoli and Battaggion 2000 Tajoli, L., and M. Battaggion. 2000).

Guidici and Paleari (2000) analyse the sample of 46 small and medium scale innovative Italian firms. The result of the study supports the pecking order theory. The main source of funds is owner's wealth, followed by short-term debt. Colombo and Grill (2007) also confirmed the hypothesis of pecking order theory and the result of the study show that only small share of firm's finances investment projects by using external equity or debt. The main financing source is entrepreneur's wealth, followed by bank loans and, finally private equity. Magri (2007) studies the financing of Italian SMEs, the result of the study show that small firms encounter difficulties in obtaining external finance due to higher information difficulties. For small innovative companies, whose activity is more challenging to assess, the cost of external finance could be even higher. The result of the study also highlighted that small innovative firms rely less on financial debts and more on internal financial resources.

4.3.4 Firm Age

Many studies have suggested that there is a relationship between a firm's age and its rate of growth. Many studies found the negative relationship between firm growth and firm age (see, for example, Evans1987; Variyam and Kraybill 1992; Dunne and Hughes 1994; Yasuda 2005) and among the variation in firm growth and age. Smaller and newer firms grow faster than larger, older ones, but the uncertainty in their growth rates are also larger.

Given these considerations our third hypothesis is

Hypothesis 4: The younger the firm, more likely it is to be high growth firm

These results support the ideas of Jovanovic's (1982) passive 'Bayesian' model of learning related to firm's growth. Firms get into the industry with various relative (fixed) efficiency levels.

Once established in the industry, firms understand their efficiency, especially in an initial period of the entrance, firms with less efficiency are forced to exit, while more efficient firms expand.

2.5 Conclusion

There has also been increased interest in the share of HGFs in different countries in order to understand what kinds of institutions and norms that are conducive to them (Schreyer, 2000; Henrekson and Johansson, 2009; Bravo-Biosca, 2010). However, a generally accepted definition of what constitutes an HGF is lacking in the literature. Recently, Eurostat and the OECD recommended that HGFs should be defined as firms with at least ten employees in the start-year and annualized employment growth rate exceeding 20 percent during a three-year period.

Furthermore, they actually argued (Eurostat-OECD, 2007, p. 61) that: "A provisional cut off rate has been recommended as 10 employees during the initial phase of the growth, but a final suggestion is estimated after tests have been conducted using a various cut off rates".

Based on the existing evidence, HGFs can be of all sizes. While small companies are over symbolized in the population of HGFs, large companies can also be significant creators of jobs (BERR2008; Coad et al. 2012). In terms of age, evidence suggests that the majority of HGFs are over 5 years old, (Anyadike-Danes et al. 2009; Bravo-Biosca 2011). However, when the growth definition shifts from employment growth to value growth, the average age of such firms in the United States is much older with fewer firms being start-ups (Acs et al.2008).

Chapter 5: Data and Empirical strategy

5.1 *Data and Sample*

The source of data came from the AIDA database, a commercial database provided by Bureau van Dijk. AIDA contains a comprehensive financial information of firms in Italy. For the study, we considered Small and Medium scale enterprise which belongs to manufacturing industries.

In this study following criterions are used to draw the sample:

(a) Firms belonging to the manufacturing industry. (b) Firms are not distressed at the time of the study. (c) firms with maximum employees of 250 during 2011-2015; (d) firms with total revenue from sales and services do not exceed 50 million during 2011-2015; (e) firms with total assets not exceeding 43 million during 2011-2015. The period from 2012 to 2015: period to determine the high growth firms. 2011: This period is the year before the rapid growth, various ratios and balance sheet data are used to specify and evaluate the factors which are efficient indicators and predictors of corporate growth. To define Small and Medium scale enterprise, we followed the European Union definition for determining an enterprise as an SME:

Table 4: Definition of SME (As per EU recommendation 2003/361):

Firm Category	Employee Count	Turnover	or	Balance Sheet total
Micro	<250	≤ € 50 million		≤ € 43 million
Small	<50	≤ € 10 million		≤ € 10 million
Medium Sized	<10	≤ € 2 million		≤ € 2 million

In the study, the period selected for the study is 2011 to 2015 (this period is selected mainly to understand the predictors of firm growth during post-global financial crisis period).

In the total sample, we eliminated those firms which do not have the sales data for any of the selected year and which have the sales data for only one year of the study. After deleting the missing values and deleting those firms which have the negative growth rate in two continuous period the final sample includes 4.904. Next, eight categories of sectors were created in manufacturing industries. Companies segment were allocated based on UK SIC (2007) description of industry and the manufacturing segments in the study were collected randomly.

5.2 *Variables*

a) Dependent Variable

The dependent variable in our study is the High growth firms (Group 1) and Low growth firms (Group 2). To determine high growth firm and low growth firm, we considered the sales growth of firms during 2011 to 2015. There is no specific method to measure firm growth throughout a period of analysis (Delmar et al. 2003). Since our source of data was based on the financial reports, we have employed sales growth, similar to the earlier study (Baum et al. 2001, Lumpkin and Dess 2001). We have determined the sales growth by taking relative growth measure and difference between the percentages of sales growth of the firms throughout the period 2011-2015.

Sales is used as the indicator of growth. since these are the most commonly used indicators of firm growth in the literature (Daunfeldt et al., 2010). HGFs are defined in different ways in the previous literature. OECD (2007), for example, defines HGFs as all firms with average annualized growth more than 20% in employment per annum, over a three-year period, given that the firm has at least ten employees in the beginning of the study period. Other studies have defined HGFs as the top x% of firms with the fastest growth rates, with the 1% and 10% as the most used cut-off levels.

Daunfeldt et al (2010, 2012), for instance, define HGFs as the 1 percent with the maximum increase in total employment growth; whereas Davidsson and Delmar (2003, 2006) and Lopéz-Garcia and Puente (2009) define HGFs as the top 10 percent companies with the quickest growth in a number of employees.

For predicting the growth of the firm, we adopted the same approach of the Z-Score model (Altman,1968). In the Altman model, the purpose of the model is to compare bankrupt firm and non-bankrupt firms using the data derived from financial statements prior to the report of bankruptcy. 2011 is considered as year before the accelerated growth. Similarly, an approach adopted by Sampagnaro (2013) where the objective of the study is to create two set of groups namely: High growth firm and Non-high growth firms and set of balance sheet ratios issued prior to the accelerated growth were identified to discriminate high growth and nonhigh growth firms using discriminant analysis. In this study, we replicated the same approach with regard to firm growth rather than firm's distress and finally, we identify two sets of firm's High growth and non-high growth firms.

We measured the sales growth by average annual turnover growth over the period from 2011 to 2015, expressed as a percentage. More concretely, to calculate the turnover growth of a year, we measured the growth rate from the previous year to the current year, expressed as a percentage.

We followed the below approach to determine High growth firm:

- Initially, we calculated Annual average growth (AAG) rate for each period covered in the study. The formula used to calculate AAG is as follows:

  AAG = Ending Value (2012,13,14,15)– Beginning Value / Beginning Value (2011,12,13,14)

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- Next, we identified measured the growth for two continuous years i, e 2012/2014 and 2013/2015

a) Group1: High growth firms

We applied the following criteria to identify HGFs and NHGFs: High growth firm is primarily characterized as per the following criteria:

(a) If the growth rate for two continuous years (2012/14 and 2013/15) is more than 20%., the rate of 20% is in consistent with the study of Goedhuys and Sleuwaegen (2016) where the measure of growth is employee growth, whereas in the present study it is sales growth.

(b) HGFs are firms which have the growth rate of less than 20percent in the year 2011 (Year before the accelerated growth).

b) Group 2: Low growth firms

We applied the following criteria to identify Slow growth firms (SLG) and NHGFs: Slow growth firm is primarily characterized as per the following criteria:

(a)If the growth rate for two continuous years (2012/14 and 2013/15) is between 0 to 10%. (b) Low growth firms are firms which have the growth rate of less than 20percent in the year 2011 (Year before the accelerated growth).

b) Independent Variable

Our first independent variable is profitability. We measured this by return on asset (ROA). The period considered is 2011 (Year before the accelerated growth). To calculate the ROA, we divided the net income by average total assets. The second independent variable is liquidity ratio, which comprises of current ratio, acid ratio and the cash ratio. The period considered is 2011 (Year before the accelerated growth). The third independent variable is solvency, Period considered is 2011 (Year before the accelerated growth).

This ratio is calculated by dividing shareholders' equity by total assets.

The fourth variable is firm's age, the period considered is 2011 (Year before the accelerated growth). Firm age was determined by the difference between firm's year of incorporation and initial period considered in the study which is 2011. Thus, the variable representing firm age is as follows: Firm age = (Initial year) 2011 - Year of Incorporation, consistent with most of the previous work (Baum et al.2001 and Moreno and Casillas.2007).

C) Control Variable

The first control variable is an industry. We classified the Industry based on NACE codes (UK SIC 2007, Industry description). A list of the industry description with code is included Appendix 1.Our second variable is the region (province of Italy).

Table 5: Definition of SME (As per EU recommendation 2003/361):

Variables	Definition
Dependent Variable	
Firm Growth	$\text{turnover growth} = \dfrac{\text{turnover (t1) -turnover (t0)}}{\text{turnover(t0)}}$
Independent Variables	
ROA	$\text{ROA} = \dfrac{\text{Net Income}}{\text{Average Total Assets}}$
Liquidity	Current ratio, acid test ratio and cash ratio
Solvency	$\text{Solvency ratio} = \dfrac{\text{Shareholder's equity}}{\text{total assets}}$
Firm Age	Firm age = (Initial period considered in the study) 2011 - Year of Incorporation

Source: Author: Note: For detail definition of firm growth refer to section 4.4.2

5.3 *Empirical Method*

The main objective of the research is to arrive at high growth firms and predict the growth of high–growth firms. Given the nature of the objective, Probit regression is one of the better statistical instrument which is more oriented to find a dichotomous dependent variable.

Specifically, Probit analysis has two basic aims: (1) characterization: where dependent variables can only take two values, i.e. high-growth and non-high growth firms, where the purpose of the model is to estimate the probability that an observation will fall into specific one of the category.

(2) Probabilistic outcome: Probit model is more oriented to find what independent variables influence a dichotomic dependent variable. This paper aims at predicting a firm's likelihood to be a high growth firm.

A Stepwise approach was adopted to select two distinct groups namely high growth firm and non-high growth firm. The purpose of the study is to estimate the probability that firm will be HGFs. High growth firm takes the value of 1 (High growth firm) and non-high growth firm takes the value of 0 (Failure). By considering the objective of the study, we choose Probit regression which as it suits the need of the study which adapts the maximum likelihood procedure. To deal with the linearity of the linear probability model, the Probit model ensures the effective interval [0,1] of the dependent variable by a link function.

$$pr(\,y_i\,=\,1\|x_{i\,1}\,,x_{i\,2}\,,\ldots\ldots,1x_{i\,k}\,=\,\Phi\left(\beta o + \beta_1 x_{i,1} + \ \beta_2 x_{i,2} + \ \ldots + \beta_k x_{i,k}\right) \tag{2}$$

The nonlinear functional form standard normal cumulative distribution function (CDF) Φ is acting as the link function in the probit model. The S-shaped distribution satisfied the valid interval of the dependent binary variable *y*, The Probit model is estimated by maximum likelihood estimation (MLE) for the nonlinearity of *E(y|x)*.

For the present study Probit model can be estimated with the below equation where the cumulative standard normal function G transforms into a predicted Y value between 0 and1:

$$\text{Pr (HGF=1)} = \Phi \ (\beta o + \beta_1 \ Lr + \beta2solv + \beta3 \ Roa + \beta4 \ Fa \qquad (3)$$

Where Φ is cumulative normal distribution and the parameter β are generally predicted by maximum likelihood. The nonlinear functional form standard normal cumulative distribution function (CDF) $\Phi \cdot ()$ is acting as the link function in the probit model.

The S-shaped distribution satisfied the valid interval of the dependent binary variable y, The Probit model is estimated by maximum likelihood estimation (MLE). Lr is liquidity ratio, solv is solvency ratio, Roa is the return on asset, and Fa is firm age. Industry and province are considered as dummy variables in order control the overall affect.1 the value of 0 in the model is considered as Non-high growth firms (NHGF), Where 1 is considered as High-growth firms (HGF).

5.4 Model Evaluation Approach

To evaluate the forecasting power of the logit model we used the following techniques:

A. Model Accuracy

Model accuracy is the most important dimension of model quality; Models can fail in two ways. Either the model predicts a company as high growth when it is a non-high growth firm, which means fails to achieve the expected growth or maybe the loss (Type I error). In this case, an investor may not get the return on investment as expected. This may also lead to loss of the investment.

The model might also predict as non-high growth firm when it is high growth firm (Type II error).

In this case, an investor may lose the opportunity to earn the higher return on the investment. Which means the company still has the potential to grow and can provide higher return without any risk. Concluding from the above, a model should accurately classify high growth firm and non-high growth firm.

The following table illustrates the two types of errors:

Table 6: Overview of Type of errors

		Actual Model	
		High growth firm	Non-High growth firm
Actual Model	High growth firm	Correct Prediction	Type I error
	Non-High growth firm	Type II error	Correct Prediction

The above table shows the overview of possible error of the model, either of these errors is associated with certain costs. Therefore, one should look to keep both error rates as low as possible. It should also to be noted that reducing one type of error often comes at the cost of other type increases. The performance of the predictive model of growth is measured by Receiver Operating Characteristics (ROC) to check the power of the model.

Chapter 6: Empirical results

6.1 Descriptive Statistics and Correlation Matrix

Table 7: Descriptive Statistics (Group 1: HGF and NHGF)

HGF (N = 1778)					NHGF (N=7027)			
Variables	Mean	Std. Dev	Min	Max	Mean	Std. Dev	Min	Max
Liquidity	1.29	1.14	0.02	9.65	1.27	1.44	0	9.93
Return on Asset	4.90	27.02	-998.31	84.66	-7.99	61.70	-974.92	996.36
Solvency	27.36	23.38	-44.89	100	38.07	33.65	-48.31	100
Firm Age	13.58	11.52	-3	84	12.58	15.28	-4	110

Note: Table sample = 45325 observations. Each variable is captured by the financial statement of 2011, i, e., the year before the accelerated growth.

Table 7 illustrates the descriptive statistics of the full sample of High growth firm(HGF) and Non-high growth firm(NHGF). The liquidity ratio of HGF is 1.29% which means that an average company had liquid assets which can pay off the current liabilities almost one time. The average age of the firm is 14 years. The return on asset of HGF is 4.90, which reveals that company is earning 5 times more profit on its every investment of its assets. The solvency ratio 27.36% shows the efficiency of the firm in meeting its long-term and short-term obligations. The liquidity ratio of NHGF is 1.27% which means that an average company had liquid assets which can pay off the current liabilities almost one time. The average age of the firm is 8 years. The return on asset of HGF is 1.56, which reveals that company is earning approximately less than 2 times more profit on its every investment of its assets. The solvency ratio 28.87% shows the efficiency of the firm in meeting its long-term and short-term obligations.

Table 8: Correlation Matrix

		(A)	(B)	(C)	(D)
Liquidity ratio	(A)	1			
Return on Asset	(B)	0.108 *	1		
Solvency	(C)	0.551*	0.13*	1	
Firm Age	(D)	0.07*	0.012*	0.187*	1

Note: (*) correlation significant at 1% level.

Table 7 shows the correlation matrix of independent variable pertaining to the year before the rapid growth (2011).

The correlation matrix of the variable is positively correlated and significant at 1% level of significance. Since the variance inflation factor (VIF) of the different variables are well below 2%, there are no multicollinearity problems.

Table 9: Descriptive Statistics (Group 2: LGF)

HGF (N = 3192)

Variables	Mean	Std. Dev	Min	Max
Liquidity	1.25	1.17	0.00	9.99
Return on Asset	1.71	29.22	-998.31	996.36
Solvency	28.80	25.81	-49.7	100
Firm Age	31.91	24.77	1	109

Note: N = 45325 observations. Each variable is captured by the financial statement of 2011, i, e., the year before the accelerated growth.

Table 9 illustrates the descriptive statistics of the full sample of Low growth firm (LGF). The liquidity ratio of HGF is 1.25% which means that an average company had liquid assets which can pay off the current liabilities almost one time. The average age of the firm is 32 years. The return on asset of LGF is 1.71, which reveals that company is earning 2 times more profit on its every investment of its assets. The solvency ratio 28.80% shows the efficiency of the firm in meeting its long-term and short-term obligations.

6.2 Estimation results of Probit Model

Table 8: Results of Probit regression; Marginal effects

Variables	HGF (Model 1)	LGF (Model 2)
Liquidity ratio	0.00448	-0.00007
	(0.43)	(0.960)
Return on Asset	0.00553***	0.00050*
	(0.00)	(0.00)
Solvency	-0.00275***	0.00051*
	(0.00)	(0.00)
Firm age	-0.00521***	0.00008
	(0.00)	(0.174)
Pseudo R2	0.1241	0.04

Note: Table 8 shows the marginal effects ***Significance at 1percent, ** Significance at 5percent, * Significance at 10percent. HGF: High growth firms, LGF: Low growth firm

Table 8 shows the estimation of the Probit model for High growth firm (HGF) and Low growth firms (LGF). Industry and province are considered as dummy variables to control for overall effects. Table 8 shows the results of Probit regression (marginal effects) where explanatory variable is a period before the accelerated growth that is 2011. Liquidity ratio is positive and statistically not significant for high growth firm and hence does not affect the firm growth, but an increase in liquidity ratio will increase the chances of firm becoming high growth firm. The liquid asset includes cash in hand, cash at bank etc. But, in case of low growth firm, it is negative and statistically insignificant. However, the positive impact of liquidity ratio is in par with the previous work of (Megaravalli and Sampagnaro, 2017).

Good liquidity position also shows the efficiency of the firms in managing its working capital management. The increase in liquidity ratio reveals the capability of the company to pay

off its short-term requirement. This result rejects H (2), As liquidity ratio positively effects the firm growth.

Further, return on asset is positive for both high growth and low growth firms which also confirms H (1) which argues that profitability is positively connected with firm growth, this result is also consistent with previous works (Chandler & Jansen,1992, Mendelson,2000 and Cowling, 2004). DuPont's analysis on annual statement illustrates a useful association between Return on Asset and Return on sales. This association shows that a High growth firm can gain a larger return on investment from its business (Return on asset = Total income (net) divided by Total assets) by depending on its potential to generate sales with its resources. This thought is backed by an extremely large value of the index of total asset turnover noted for the companies that belong to the HGF category. Solvency ratio shows a negative association (-0.00014, significant at 5 % level). This means that the more solvent a company is (i.e. more equity), the less growth it will have. This also confirms our H (3) which argues that solvency is negatively associated with firm growth. Solvency shows positive and statistically significant for low growth firms.

Further, firm age is negatively connected with firm growth for high growth firms, whereas positive for low growth firm and statistically significant. The result indicates that the chances of being high growth firm (HGF) are higher for young firms. This also confirms our H (4) which argues that younger firm, more likely that it becomes high growth firm. But younger firms are also more prone to strongly decline or fail. This result is also on par with (Goedhuys et al., 2016). Liquidity ratio of the Low growth firm is negative and statistically insignificant.

6.3 Model Accuracy

This section addresses the forecasting power of the model for the financial year 2011 (t-1), the most important question is whether the model can predict the growth of the firm. To test the model accuracy, i present the sensitivity and specificity as well as Type I and type II errors for the model estimated in this research. Classification matrix shows the rates of good classification of high growth firm and non-high growth firms. Further, type I (112) and type II (1621). Type I error represents the misclassification of high growth firms as non-high growth firm's ones.

Table 9. Type I and Type II error (Classification Matrix): Model 1 (High Growth Firm)

	HGFs (D)	NHGFS (~D)	Total
HGFs (+)	17	112	129
NHGFs (-)	1621	31197	32818
Total	1638	31309	32947

Sensitivity	Pr (+| D)	1.04percent
Specificity	Pr(-|~D)	99.64percent
Type I (False - rate for true D)	Pr (-| D)	98.96percent
Type II error (False + rate for true ~D)	Pr(+|~D)	0.36percent
Correctly classified		94.74percent

Note: Table 9 shows the result of classification matrix, the results are promising with an overall percentage of correctly classified prediction which is 94.74percent.

Type II error are the misclassification of non-high growth firms with that of high growth firms as per these results it can be noticed that the results are more biased towards HGFs.

Table 10. Type I and Type II error (Classification Matrix): Model 2 (Low Growth firms)

	HGFs (D)	NHGFS (~D)	Total
SGFs (+)	501	2158	2659
NHGFs (-)	2255	28313	30568
Total	2756	30471	33227

Sensitivity	Pr (+| D)	18.18percent
Specificity	Pr(-|~D)	92.92percent
Type I (False - rate for true D)	Pr (-| D)	81.82percent
Type II error (False + rate for true ~D)	Pr(+|~D)	7.08percent
Correctly classified		86.72percent

Note: Table 10 shows the result of classification matrix, the results are promising with an overall percentage of correctly classified prediction which is 86.72percent.

Table 10 addresses the forecasting power of the model for the financial year 2011 (t-1) representing Low growth firms. The sensitivity and specificity as well as Type I and type II errors for the model estimated in this research. Classification matrix shows the rates of good classification of high growth firm and non-high growth firms. Further, type I (2158) and type II (2255).

Type I error represents the misclassification of high growth firms as non-high growth firm's ones. Type II error are the misclassification of non-high growth firms with that of high growth firms as per these results it can be noticed that the results are more biased towards HGFs.

6.3 Conclusion and Future study

The objective of the study was predicting the growth for high growth firms and low growth firms which is one of the most important studies in Accounting and Finance. Evaluating and predicting the growth of firms is important because it helps the Investors, Investment banks, and Venture capital firms to select the best potential firms for their investment to earn higher profits. So, using the financial ratios to evaluate the growth of companies has been also considered by credit providers, stockholders, and financial analysts.

The aim of this study was to arrive at high growth firms using sales as the measure of growth and choose the ratios and balance sheet items pertaining to a year before the growth. The statistical sample included the manufacturing companies based in Italy. For analysing the Probit model, Stata 13.0 version was used respectively. The results showed that Probit model could predict the growth of the firm and the classification matrix of the Model 1 (HGF) showed 94.74% and Model 2 (LGF) correctly classified matrix is 86.72% respectively. Four hypotheses were framed, where hypothesis one was profitability positively effects the firm growth, to test the hypothesis Probit regression was used to understand how profitability influences the likelihood of firm becoming a high growth and low growth.

The Probit result shows that profitability which was measured by ROA showed the positive relationship and confirms H (1) which means increases in the profitability will also influence the likelihood of firm becoming a high growth. Our results are on par with Chandler & Jansen (1992) where the result of the study showed significant positive correlation between sales growth and profit. Mendelson (2000) and Cowling (2004) reported the same conclusion

and also Gupta (1981) agrees with this thinking as he shows in his concept of scale economies that growth helps to increase the size of the firm, which in turn helps to make more profit.

The H (2) was testing the influence of liquidity in firm becoming a high growth and low growth firms. Liquidity showed the positive association for high growth firms which confirms our H (2) which argues that liquidity ratio positively effects the likelihood of high growth firm, whereas H (2) is rejected in the case of low growth firm as it is negatively connected and statistically insignificant. However, Gill & Mathur (2011) expect that firms that can maintain higher liquidity levels will face less severe financing constraints. Surplus cash will shrink financing constraints, enabling the company to finance growth opportunities at the lower cost.

The H (3) of the study was solvency ratio is negatively connected with firm growth. The result of the Probit regression showed that firm growth is negatively connected in the case of high growth firms, which confirms that H (3) is accepted in the case of high growth firm, whereas it is rejected in the case of low growth firm. As per Myers & Majluf (1984), better known as the pecking order theory. According to them, a company manager will first use retained earnings as input for investments and will borrow at the next stage. If the company is in its first stage, the manager will choose to invest using the retained earnings in order to grow. This means that the internal financing will continue until the retained earnings reach the amount of zero.

H (4), in the study, argued that firm age is negatively connected with firm growth which means that younger firms will have the higher possibility of growth than its older counterparts. The result of the study in the case of high growth firm confirms that firm age is negatively connected with firm growth. This also confirms our H (4) in the case of high growth firm. Whereas, in the case of low growth firm H (4) is rejected. Our results are in par with previous work where many studies found the negative relationship between firm growth and firm age (see, for example, Variyam and Kraybill 1992; Dunne and Hughes 1994; Yasuda 2005).

Future studies and policy implication

The future studies can focus more on recognizing the differences in various growth patterns: unidimensional and multidimensional phenomenon. In recognizing which of these growths pattern is more appropriate further study should be done which constructs the appropriate samples and measures. There is a certain aspect that is not covered in the present study.

For example, the present idea can be implemented in one industry rather than many industries which may be the consistent approach, the present data involves only the Italian firms where the same idea can be implemented across different markets and industries as well. Further, future study can also focus individually on younger firms or large-scale firms. The results have some clear policy implications. First and foremost, it is difficult to work out policies directly targeting sustained growth champions. Growth tends to be erratic, sporadic and short-term. As a consequence, HGFs are difficult to predict and their growth performance changes quickly over time. A 'picking the winner' strategy seems unjustified in this regard.

In most countries, assistance is largely focused on support for R&D and targeted at certain types of firms, especially firms at the start-up stage. The present study again pointed out that younger firms have the higher possibility of growth. More encouraging are the results with respect to return on asset. Profitable companies will be more encouraged to grow because they will not only have the financial resources to grow, but their constant profit generation will also make it feasible to maintain growth (Nelson & Winter,1982). Hence, our results highlight the need for a more integrated policy towards HGFs. Such a policy should not only provide stimulating framework conditions (tax systems, regulations) but also effective legal framework and regulation in order to support the growth of SMEs which can be in the form of tax rebates, subsidies etc.

The result of solvency ratio indicates the role of the government in the "SME-Access to Finance". The government should take necessary steps in order to overcome the hurdles in promoting the growth of SMEs and subsequently simplifying the accessibility of finance to SMEs. The results can be considered as an initial set of insights for managers and practitioners. In order to develop a proven set of best practices supporting executives in their decision-making processes with respect firm growth modes and thus their growth strategies

References

Acs, Z. J., & Audretsch, D. B. (1990) Innovation and small firms. Mit Press.

Acs, Z. J., Audretsch, D. B., Braunerhjelm, P., & Carlsson, B. (2005). Growth and entrepreneurship: an empirical assessment (No. 3205). Papers on entrepreneurship, growth and public policy.

Acs, Z. J., Parsons, W., & Tracy, S. (2008). High-impact firms: Gazelles revisited. Washington, DC.

Ackah, J., & Vuvor, S. (2011). The Challenges faced by Small & Medium Enterprises (SMEs) in Obtaining Credit in Ghana.

Adjei, D. S. (2012). Micro, Small and Medium Scale Enterprises in Ghana: Challenges and Prospects. A Case Study of Sekondi Takoradi Metropolis. Unpublished Master‟s thesis, Kwame Nkrumah University of Science and Technology.

Advani, A. 1997. "Industrial Clusters: A Support System for Small and Medium-Sized Enterprises", Private Sector Development, World Bank Occasional Paper No. 32, World Bank, Washigton, DC.

Agyei-Mensah, B. K. (2010). Financial management practices of small firms in Ghana: An empirical study.

Ahiabor, G. (2013). The Impact of Microfinance on the Development of Small Scale Enterprises in the Ledzorkuku-Krowor Municipality in the Greater Accra Region of Ghana. European Journal of Business and Management, 5(7), 165-172.

Ahiawodzi, A.K., and Adade, T.C. (2012). Access to Credit and Growth of Small and Medium Scale Enterprises in the Ho Municipality of Ghana, British Journal of Economics, Finance and Management Sciences, 6 (2): 34-51.

Aktas, N., de Bodt, E., & Samaras, V. (2008). Do acquisitions and internal growth impact differentially firm performance. Retrieved from http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEET INGS/2009-Milan/papers/331.pdf

Alchian, A. A. (1950). Uncertainty, evolution, and economic theory. Journal of political economy, 58(3), 211-221.

Altman, E. I. (1968) Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. The journal of finance, 23(4), 589-609.

Anderson, R. W. (2002). Capital structure, firm liquidity and growth (No. 27). Working Paper Research.

Ang, J. S. (1991). Small business uniqueness and the theory of financial management. The Journal of Entrepreneurial Finance, 1(1), 1.

Ansoff, H. I. (1957). Strategies for diversification. Harvard business review, 35(5), 113-124.

Anheier, H. K. and H. D. Seibel, 1987. "Small Scale Industries and Economic Development in Ghana", Business Behaviour and Strategies in In formal Sector Economies, Verlag Breitenbech, Saarbruckh, Germany.

Anyadike-Danes, M., Bonner, K., Hart, M., & Mason, C. (2009). Measuring business growth: high growth firms and their contribution to employment in the UK.

Ardishvili, A., Cardozo, S., Harmon S. and Vadakath, S. (1998) 'Towards a theory of new venture growth', Paper presented at the 1998 Babson Entrepreneurship Research Conference, Ghent, Belgium.

Audretsch, D. B., & Mahmood, T. (1994). Firm selection and industry evolution: the postentry performance of new firms. Journal of Evolutionary Economics, 4(3), 243-260.

Audretsch, D. B. (1995). Innovation, growth and survival. International journal of industrial organization, 13(4), 441-457.

Audretsch, D. B., E. Santarelli and M. Vivarelli (1999) "Start-up Size and Industrial Dynamics: Some Evidence from Italian Manufacturing", International Journal of Industrial Organization, 17(7), 965-983.

Audretsch, D. B., Klomp, L., Santarelli, E., & Thurik, A. R. (2004). Gibrat's Law: Are the services different?. Review of Industrial Organization, 24(3), 301-324.

Aybar Arias, Cristina; Casino Martínez, Alejandro y López Gracia, José (2000): "Enfoques emergentes en torno a la estructura de capital: el caso de la Pyme". Paper presented at the VIII Workshop in Finance, October, Madrid.

Bahadir, S. C., Bharadwaj, S., & Parzen, M. (2009). A meta-analysis of the determinants of organic sales growth. International Journal of Research in Marketing, 26(4), 263-275.

Banerjee, Abhijit V. and Esther Duflo. 2004. "Do Firms Want to Borrow More? Testing Credit Constraints Using a Directed Lending Program." CEPR Discussion Paper 4681

Barringer, Jones & Neubaum (2005) A quantitative content analysis of the characteristics of rapid-growth firms and their founders, Journal of Business Venturing 20(2005)663-687

Barron, D. N., West, E., & Hannan, M. T. (1994). A time to grow and a time to die: Growth and mortality of credit unions in New York City, 1914-1990. American Journal of Sociology, 100(2), 381-421.

Bartelsman, E., Scarpetta, S., & Schivardi, F. (2005) Comparative analysis of firm demographics and survival: Evidence from micro-level sources in OECD countries. Industrial and Corporate Change, 14(3), 365–391.

Bartelsman, E., Haltiwanger, J., & Scarpetta, S. (2009). Measuring and analyzing crosscountry differences in firm dynamics Producer dynamics: New evidence from micro data (pp. 15-76): University of Chicago Press.

Baum J.R., Locke E.A., Smith K.G (2001), "A Multidimensional Model of Venture Growth", the Academy of Management Journal, 44(2), 292-303.

Beaver, W. H. (1966). Financial ratios as predictors of failure. Journal of accounting research, 71-111.

Becchetti, L., & Trovato, G. (2002). The determinants of growth for small and medium sized firms. The role of the availability of external finance. Small Business Economics, 19(4), 291-306.

Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. Journal of Banking & Finance, 28(3), 423-442.

Beck, Thorsten, Aslı Demirgüç-Kunt, and Vojislav Maksimovic. 2004a. "Bank Competition and Access to Finance: International Evidence." Journal of Money, Credit and Banking 36, 627-48

Beck, Thorsten, Aslı Demirgüç-Kunt, and Vojislav Maksimovic. 2004b. "Financing Patterns Around the World: Are Small Firms Different?" World Bank Mimeo.

Beck, T Demirguc-Kunt, A and Maksimovic, V (2005): "Financial and legal constraints to growth: does firm size matter?" Journal of Finance Vol 60(1), 137–177.

Beck, T., Demirgüç-Kunt, A., Laeven, L., & Maksimovic, V. (2006). The determinants of financing obstacles. Journal of International Money and Finance, 25(6), 932-952.

Beekman, A. V., & Robinson, R. B. (2004). Supplier Partnerships and the Small, High-Growth Firm: Selecting for Success. Journal of Small Business Management, 42(1), 59-77.

Berger, A. N., & Udell, G. F. (1995). Relationship lending and lines of credit in small firm finance. Journal of business, 351-381.

Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. Journal of financial economics, 37(1), 39-65.

Berger, A. N., & Udell, G. F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. Journal of banking & finance, 22(6), 613-673.

BERR (2008) High growth firms in the UK – Lessons from an analysis of comparative UK
Biekpe, N. (2004). Financing small businesses in Sub-Saharan Africa: Review of some key credit lending models and impact of venture capital provision. Journal of African Business, 5(1), 29-44.

Birch D L (1987) Job Generation in America, the Free Press: New York.

Birch, David L. and James Medoff, (1994) ―Gazelles,‖ in Lewis C. Solmon and Alec R. Levenson (eds.), Labor Markets, Employment Policy and Job Creation, Boulder: Westview Press, pp. 159-168.

Birley, S., & Westhead, P. (1990). Growth and performance contrasts between 'types' of small firms. Strategic management journal, 11(7), 535-557.

Bilkey, W. J. (1978). An attempted integration of the literature on the export behavior of firms. Journal of international Business studies, 33-46.

Biondi, Y., Canziani, A., & Kirat, T. (2008). The firm as an entity: Implications for economics, accounting and the law: Routledge.

Binks, M. R., Ennew, C. T., & Reed, G. V. (1992). Information asymmetries and the

provision of finance to small firms. International Small Business Journal, 11(1), 35-46

Bonaccorsi di Patti, E., & Dell'Ariccia, G. (2004). Bank competition and firm creation. Journal of Money, Credit, and Banking, 36(2), 225-251.

Bottazzi, G., Dosi, G., Lippi, M., Pammolli, F., & Riccaboni, M. (2001). Innovation and corporate growth in the evolution of the drug industry. International Journal of Industrial Organization, 19(7), 1161-1187.

Bottazzi, G., & Secchi, A. (2005). Growth and diversification patterns of the worldwide pharmaceutical industry. Review of industrial Organization, 26(2), 195-216.

Bottazzi, G., Secchi, A., & Tamagni, F. (2007). Productivity, profitability and financial fragility: empirical evidence from Italian business firms (No. 2006/08). LEM working paper series.

Brush, T. H., Bromiley, P., & Hendrickx, M. (2000). The free cash flow hypothesis for sales growth and firm performance. Strategic Management Journal, 21(4), 455- 472.

Bravo-Biosca, A. (2010). Firm growth dynamics across countries: Evidence from a new database. FORA-NESTA Working Paper.

Bravo-Biosca, A. (2011, October). A look at business growth and contraction in Europe. In 3rd European Conference on Corporate R&D and Innovation CONCORD-2011.

Brealey, R. A., Myers, S. C., & Allen, F. (2011). Principles of corporate finance (10. ed ed.). New York, NY: McGraw-Hill/Irwin.

Brüderl, J., & Preisendörfer, P. (1998). Network support and the success of newly founded business. Small Business Economics, 10(3), 213-225.

Cabral, L., & Mata, J. (2003). On the evolution of the firm size distribution: Facts and theory. The American Economic Review, 93(4), 1075-1090.

Capasso, M., Cefis, E., & Sapio, A (2013) Reconciling quantile auto regressions of firm size and variance-size scaling. Small Business Economics, 41(3), 609–632

Capelleras, J. L., & Rabetino, R. (2008). Individual, organizational and environmental determinants of new firm employment growth: evidence from Latin America. International Entrepreneurship and Management Journal, 4(1), 79-99.

Capon, N., Farley, J. U., & Hoenig, S. (1990). Determinants of financial performance: a meta-analysis. Management science, 36(10), 1143-1159.

Carden, S. D., Mendonca, L. T., & Shavers, T. (2005). What global executives think about growth and risk. McKinsey Quarterly, 2, 16-25.

Carrer, M., & Klomp, L (1996) Small business and job creation: a comment. Small Business Economics, 8(4): 317-322

Cassia, L., Cogliati, G. M., & Paleari, S. (2009). Hyper-Growth Among European SMEs: An Explorative Study.

Caves, R. E. (1998) Industrial organization and new findings on the turnover and mobility of firms. Journal of Economic Literature, 36(4), 1947–1982

Cetorelli, Nicola and Philip E. Strahan. 2004. "Finance as a Barrier to Entry: Bank Competition and Industry Structure in Local U.S. Markets." Federal Reserve Bank of Chicago Working Paper.

Coad, A. (2007). Firm growth: A survey

Coad, A., & Hölzl, W. (2010). Firm growth: empirical studies (Vol. 361). WIFO Working Paper.

Coad, A., & Hölzl, W. (2012). Firm growth: empirical analysis. Handbook on the Economics and Theory of the Firm, 324.

Coad, A., Daunfeldt, S. O., Hölzl, W., Johansson, D., & Nightingale, P (2014). High-growth firms: Introduction to the special section. Industrial and Corporate Change, 23(1), 91–112

Coad, A., Frankish, J. S., Roberts, R. G., & Storey, D. J. (2016). Predicting new venture survival and growth: Does the fog lift?. Small Business Economics, 47(1), 217-241.

Chandler Jr, A. D. (1990). Strategy and structure: Chapters in the history of the industrial enterprise (Vol. 120): MIT press.

Chandler, A. D (1992) what is a firm? A historical perspective. European Economic Review, 36(2-3), 483–492

Chandler, G. N., & Jansen, E. (1992). The founder's self-assessed competence and venture performance. Journal of Business venturing, 7(3), 223-236.

Chandy, R. K., & Tellis, G. J. (1998). Organizing for radical product innovation: The overlooked role of willingness to cannibalize. Journal of marketing research, 474-487.

Chen, K. S., Babb, E. M., & Schrader, L. F. (1985). Growth of large cooperative and proprietary firms in the US food sector. Agribusiness, 1(2), 201-210.

Cinca, C. S., Molinero, C. M., & Larraz, J. G (2005) Country and size effects in financial ratios: A European perspective. Global Finance Journal, 16(1), 26-47.

Clarke, George, Robert Cull, and Maria Soledad Martinez Peria. 2006. "Foreign Bank Participation and Access to Credit Across Firms in Developing Countries." Journal of Comparative Economics 34, 774-795.

Coad, A. (2007). Testing the principle of 'growth of the fitter': the relationship between profits and firm growth. Structural Change and economic dynamics, 18(3), 370-386.

Coad, A., & Hölzl, W (2009) On the Autocorrelation of Growth Rates. Journal of Industry, Competition and Trade, 9(2), 139–166

Coad, A., & Hölzl, W. (2012). 24 Firm growth: empirical analysis. Handbook on the economics and theory of the firm, 324.

Coad, A., & Broekel, T (2012) Firm growth and productivity growth: evidence from a panel VAR. Applied Economics, 44(10), 1251–1269

Cofie, A. A. (2012). The Challenges of Financing Small and Medium Scale Enterprises (SMEs) in the Ashanti Region, A Case Study of Stanbic Bank (GH) Ltd. EMBA Dissertation.

COGNETICS (2000) Business Almanac
Cohen, W. M., & Klepper, S. (1996). Firm size and the nature of innovation within industries: the case of process and product R&D. The review of Economics and Statistics, 232-243.

Cole, R. A., & Wolken, J. D. (1995). Financial services used by small businesses: Evidence from the 1993 National Survey of Small Business Finances. Fed. Res. Bull., 81, 629.

Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. Journal of business venturing, 9(5), 371-395.

Cox, J., and Goldratt, E.M. (1986). The goal: a process of on-going improvement. [Croton-on-Hudson, NY]: North River Press.

Cowling, M. (2004). The growth–profit nexus. Small Business Economics, 22(1), 1-9.

Cowling, M., Liu, W., & Ledger, A. (2012). Small business financing in the UK before and during the current financial crisis. International Small Business Journal, 30(7), 778-800.

Criscuolo, C, Gal, P and Menon, C (2014): "The dynamics of employment growth: new evidence from 18 countries", OECD Technology and Industry Policy Papers No. 14.

Das, S. (1995). Size, age and firm growth in an infant industry: The computer hardware industry in India. International Journal of Industrial Organization, 13(1), 111-126.

Daunfeldt, S. O., Elert, N., & Johansson, D. (2010). The economic contribution of high-growth firms: Do definitions matter. Ratio working papers, 151.

Daunfeldt, S. O., Halvarsson, D., & Johansson, D. (2012). A cautionary note on using the Eurostat-OECD definition of high-growth firms (No. 65). HUI Research.

Daunfeldt, S-O., and Halvarsson, D (2015) Are High-Growth Firms One-Hit Wonders? Evidence from Sweden. Small Business Economics, 44(2), 361-383

Davidsson, P., Kirchhoff, B., Hatemi–J, A., & Gustavsson, H. (2002). Empirical analysis of business growth factors using Swedish data. Journal of small business management, 40(4), 332-349.

Davidsson, P., Achtenhagen, L., & Naldi, L. (2005). Research on small firm growth: a review. Davidsson, P., & Wiklund, J. (2006). Conceptual and empirical challenges in the study of firm growth. Entrepreneurship and the Growth of Firms, 1(1), 39-61.

Davidsson, P., Steffens, P. R., & Fitzsimmons, J. R. (2008). Performance assessment in entrepreneurship and management research: Is there a pro-growth bias?

Davidsson, P., Steffens, P., & Fitzsimmons, J. (2009). Growing profitable or growing from profits: Putting the horse in front of the cart?. Journal of Business Venturing, 24(4), 388-406.

Davidsson, P., Achtenhagen, L., & Naldi, L. (2010). Small firm growth: Now Publishers Inc.

DeBresson, C., & Amesse, F. (1991). Networks of innovators: a review and introduction to the issue. Research policy, 20(5), 363-379.

De Jong, A., Mertens, G., Van der Poel, M., & Van Dijk, R. (2012). Does Earnings Management Affect Financial Analysts? Survey Evidence. Survey Evidence (June 1, 2012).

Delmar, F (1997) 'Measuring growth: methodological considerations and empirical results', in Donckels, R. and Miettinen, A. (Eds.), pp.199–216, Ashgate Publishing Ltd, Hanks, England

Delmar, F., Davidsson, P., & Gartner, W. B (2003) Arriving at the high-growth firm. Journal of Business Venturing

Demirgüç-Kunt, A., & Maksimovic, V. (1998). Law, finance, and firm growth. The Journal of Finance, 53(6), 2107-2137.

Denrell J., Fang C., Liu C., (2015) Chance Explanations in the Management Sciences. Organization Science, in press

Dencker, J. C., Gruber, M., & Shah, S. K. (2009) Pre-entry knowledge, learning, and the survival of new firms. Organization Science, 20(3), 516-537

De Haas, Ralph and Ilko Naaborg. 2005. "Does Foreign Bank Entry Reduce Small Firms' Access to Credit? Evidence from European Transition Economies." De Nederlandsche Bank Working Paper 50.

De Kok, J, Vroonhof, P, Verhoeven, W, Timmermans, N, Kwaak, T, Snijders, J and Westhof, F (2011): "Do SMEs create more and better jobs?", European Commission Study on the SMEs impact on the EU labour market.

Dess, G. G., & Beard, D. W. (1984). Dimensions of organizational task environments. Administrative Science Quarterly, 52-73.

Diamond, D. W. (1993). Bank loan maturity and priority when borrowers can refinance. Capital Markets and Financial Intermediation, 46-68.

Dixon, J and Rollin, A (2012): "Firm dynamics: employment growth rates of small vs large firms in Canada", The Canadian Economy in Transition Series No 25

Dobson, S. M., & Gerrard, B. J. (1989). Growth and profitability in the Leeds engineering sector. Scottish Journal of Political Economy, 36(4), 334-52.

Droucopoulos, V. (1983). International big business revisited: On the size and growth of the world's largest firms. Managerial and Decision Economics, 4(4), 244-252.

Du, J., & Temouri, Y. (2015). High-growth firms and productivity: evidence from the United Kingdom. Small Business Economics, 44(1), 123-143.

Dunne, P., & Hughes, A. (1994). Age, size, growth and survival: UK companies in the 1980s. The Journal of Industrial Economics, 115-140.

Durinck, E., Laveren, E., & Lybaert, N. (1997). The impact of sales growth above a sustainable level on the financing choice of Belgian industrial SMEs (No. 1997014).

Eurostat, O. E. C. D. (2007). Eurostat-OECD manual on business demography statistics.

Evans, D. S (1987a) The relationship between firm growth, size, and age: Estimates for 100 manufacturing industries. The Journal of Industrial Economics

Evans, D. S (1987b) Tests of Alternative Theories of Firm Growth. Journal of Political Economy, 95(4), 657–674

Feeser, H. R., & Willard, G. E. (1990). Founding strategy and performance: A comparison of high and low growth high tech firms. Strategic management journal, 11(2), 87-98.

Fernández, C., García, R., Lopez-Garcia, P., Marzinotto, B., Serafini, R., Vanhala, J., & Wintr, L. (2017). Firm growth in Europe: an overview based on the CompNet labour module.

Fernando, A. C. (2011). Business environment. Pearson Education India.

Fischer, E., & Reuber, A. R. (2003). Support for rapid-growth firms: a comparison of the views of founders, government policymakers, and private sector resource providers. Journal of small business management, 41(4), 346-365.

Freeman, C. (1982). The economics of industrial innovation.

Friedman, M. (1953). The methodology of positive economics.

Filippetti, A., & Archibugi, D. (2011). Innovation in times of crisis: National Systems of Innovation, structure, and demand. Research Policy, 40(2), 179-192.

Fischer, E., & Reuber, a R (2003) Support for Rapid-Growth Firms: A Comparison of the Views of Founders, Government Policymakers, and Private Sector Resource Providers

Fizaine, F. (1968). Analyse statistique de la croissance des entreprises selon l'age et la taille. Revue d'economie politique, 78(4), 606-620.

Gabe, T. M., & Kraybill, D. S. (2002). The effect of state economic development incentives on employment growth of establishments. Journal of Regional Science,42(4), 703-730.

Galindo, A., Panizza, U., & Schiantarelli, F. (2003). Debt composition and balance sheet effects of currency depreciation: a summary of the micro evidence. Emerging Markets Review, 4(4), 330-339.

Garnsey, E. (1998). A theory of the early growth of the firm. Industrial and corporate change, 7(3), 523-556.

Garrouste, P., & Saussier, S. (2005). Looking for a theory of the firm: future challenges. Journal of Economic Behavior & Organization, 58(2), 178-199.

Gibrat, Robert (1931) Les Inégalités Économiques, Paris, Sirey

Gilbert, B. A., McDougall, P. P., & Audretsch, D. B. (2006). New venture growth: A review and extension. Journal of management, 32(6), 926-950.

Gill, A., & Mathur, N. (2011). Factors that influence financial leverage of Canadian firms. Journal of Applied Finance and Banking, 1(2), 19.

Geroski, P. A. (1989). Entry, innovation and productivity growth. The Review of Economics and Statistics, 572-578.

Geroski, P. A. P. a (1995) Innovation and competitive advantage. Organisation for Economic Co-operation and Development Economics Department Working Papers

Geroski, P.A (1995b) "The Growth of Firms in Theory and in Practice," Working Paper No. 2092 (London: Centre for Economic Policy Research)

Geroski, P., & Gugler, K. (2004). Corporate growth convergence in Europe. Oxford Economic Papers, 56(4), 597-620.

Glancey, K. (1998). Determinants of growth and profitability in small entrepreneurial firms. International Journal of Entrepreneurial Behavior & Research, 4(1), 18-27.

Goddard, J., Wilson, J., & Blandon, P. (2002). Panel tests of Gibrat's law for Japanese manufacturing. International Journal of Industrial Organization, 20(3), 415-433.

Goddard, J. A., Molyneux, P., & Wilson, J. O. (2004). Dynamics of growth and profitability in banking. Journal of Money, Credit, and Banking, 36(6), 1069-1090.

Goedhuys, M., & Sleuwaegen, L. (2016). High-growth versus declining firms: the differential impact of human capital and R&D. Applied Economics Letters, 23(5), 369-372.

Goldratt, E. (1990). haystack syndrome. North river press.

Greiner, L. E. (1972). Evolution and revolution as organizations grow.

Grinyer, P. H., McKiernan, P., & Yasai-Ardekani, M. (1988). Market, organizational and managerial correlates of economic performance in the UK electrical engineering industry. Strategic Management Journal, 9(4), 297-318.

Gutenberg, E. (1997). Die Unternehmung als Gegenstand betriebswirtschaftlicher Theorie: Gabler Verlag.

Gupta, V. K. (1981). Minimum efficient scale as a determinant of concentration: A reappraisal. The Manchester School, 49(2), 153-164.

Gyamfi, G. D. (2012). Assessing the effectiveness of credit risk management techniques of microfinance firms in Accra. Journal of Science and Technology (Ghana), 32(1), 96-103.

Hall, B. H. (1986). The relationship between firm size and firm growth in the US manufacturing sector.

Hall, B. H (1987) The Relationship between Firm Size and Firm Growth in the US Manufacturing Sector. The Journal of Industrial Economics

Hall, B. H. (1988). The relationship between firm size and firm growth in the US manufacturing sector: National Bureau of Economic Research Cambridge, Mass., USA.

Hall, L., & Bagchi-Sen, S. (2001). An analysis of R&D, innovation and business performance in the US biotechnology industry. International Journal of Biotechnology, 3(3-4), 267-286.

Haltiwanger, JC, Jarmin, RS and Miranda, J (2010): "Who creates jobs? Small vs large vs young", NBER Working paper No 16300.

Hardwick, P., & Adams, M. (2002). Firm size and growth in the United Kingdom life insurance industry. Journal of Risk and Insurance, 69(4), 577-593.

Harhoff, D., K. Stahl and M. Woywode (1998) "Legal Form, Growth and Exit of West German Firms. Empirical Results for Manufacturing, Construction, Trade and Service Industries", Journal of Industrial Economics, 46(4), 453-488

Hart, P. (1962). The size and growth of firms. Economica, 29-39.

Hart, P. E., & Oulton, N. (1996). Growth and size of firms. The Economic Journal, 1242-1252.

Haveman, H. A. (1993). Follow the leader: Mimetic isomorphism and entry into new markets. Administrative science quarterly, 593-627.

Havnes, P. A., & Senneseth, K. (2001). A panel study of firm growth among SMEs in networks. Small business economics, 16(4), 293-302.

Hay, M., & Kamshad, K. (1994). Small firm growth: intentions, implementation and impediments. Business Strategy Review, 5(3), 49-68.

Helfand, J, A Sadeghi and D Talan (2007): "Employment dynamics: small and large firms over the business cycle", Monthly Labor Review, Vol 130, March 39–50.

Hellmann, T., & Puri, M. (2002). Venture capital and the professionalization of start-up firms: Empirical evidence. The journal of finance, 57(1), 169-197.

Henrekson, M., & Johansson, D. (2008). Competencies and institutions fostering high-growth firms. Foundations and Trends® in Entrepreneurship, 5(1), 1-80.

Henrekson, M., & Johansson, D. (2010). Gazelles as job creators: a survey and interpretation of the evidence. Small Business Economics, 35(2), 227-244.

Hermelo, F. D., & Vassolo, R. (2007). The determinants of firm's growth: an empirical examination. Revista Abante, 10(1), 3-20.

Hess, E. D., & Kazanjian, R. K. (2006). The search for organic growth: Cambridge University Press.

Higson, C., Holly, S., & Kattuman, P. (2002). The cross-sectional dynamics of the US business cycle: 1950–1999. Journal of Economic Dynamics and Control, 26(9), 1539-1555.

Hodgson, G. M. (2002). The Legal Nature of the Firm and the Myth of the Firm-Market Hybrid. International Journal of the Economics of Business, 9(1), 37-60.

Holmstrom, B., & Tirole, J. (1993). Market liquidity and performance monitoring. Journal of Political Economy, 101(4), 678.

Honohan, Patrick and Thorsten Beck. 2007. Making Finance Work for Africa, World

Bank.

Jang, S. S., & Park, K. (2011). Inter-relationship between firm growth and profitability. International Journal of Hospitality Management, 30(4), 1027-1035.

Jordan, Judith; Lowe, Julian and Taylor, Peter (1998): "Strategy and financial policy in UK small firms". Journal of Business Finance & Accounting, 25 (1) & (2), January/March, pp.1-27.

Ijiri, Y., and Simon, H.A. "Business Firm Growth". Econometrica 35 (April 1967): 348-355

Jovanovic, B. (1982). Selection and the Evolution of Industry. Econometrica: Journal of the Econometric Society, 649-670

Kayanula, D. and P. Quartey, 2000. "The Policy Environment for Promoting Small and Medium-Sized Enterprises in Ghana and Malawi", Finance and Development Research

Kent, M., & Ignatius, A. (2011). Shaking things up at Coca-Cola. Harvard Business Review.

Programme, Working Paper Series, Paper No15, IDPM, University of Manchester

Kaldor, N. (1966). Causes of the slow rate of economic growth of the United Kingdom: an inaugural lecture. Cambridge University Press.

Klapper, Leora. 2006. "The Role of "Reverse Factoring" in Supplier Financing of Small and Medium Sized Enterprises," Journal of Banking and Finance 30, 3111-30.

Klapper, Leora, Luc Laeven, and Raghuram Rajan. 2006. "Entry Regulation as a Barrier to Entrepreneurship," Journal of Financial Economics, 82, 591-629.

Klapper, Leora and Juan Miguel Quesada Delgado. 2007. "Entrepreneurship and Economic Development: Methodology and Results." World Bank mimeo.

Klette, T. J., & Griliches, Z. (2000). Empirical patterns of firm growth and R&D investment: a quality ladder model interpretation. The Economic Journal, 110(463), 363-387.

Kumar, M. S. (1985). Growth, acquisition activity and firm size: evidence from the United Kingdom. The Journal of Industrial Economics, 327-338.

Kumar, P. R., & Ravi, V. (2007). Bankruptcy prediction in banks and firms via statistical and intelligent techniques–A review. European journal of operational research, 180(1), 1-28.

Lang, L., Ofek, E., & Stulz, R. (1996). Leverage, investment, and firm growth. Journal of financial Economics, 40(1), 3-29.

Lawless, M (2013): "Age or size? Determinants of job creation", Central Bank of Ireland Research and Technical Papers 02/RT/13

Lee, R. P., Johnson, J. L., & Grewal, R. (2008). Understanding the antecedents of collateral learning in new product alliances. International Journal of Research in Marketing, 25(3), 192-200.

Lee, N. (2014). What holds back high-growth firms? Evidence from UK SMEs. *Small Business Economics*, *43*(1), 183-195.

Lengnick-Hall, C. A. (1992). Innovation and Competitive Advantage: What We Know and What We Need to Learn. Journal of Management, 18(2), 399.

Levinthal D.A (1991) Random walks and organizational mortality. Administrative Science Quarterly 36 (3), 397-420

Lewis, V. L., & Churchill, N. C. (1983). The five stages of small business growth.

Liedholm, C. and D. Mead, 1987. "Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications", International Development Paper No.9, Department of Agricultural Economics, Michigan State University, East Lansing, MI, USA.

Liedholm, C. (2001). Small firm dynamics; evidence from Africa and Latin America, World bank institute.

Limère, A., Laveren, E., & van Hoof, K. (2004). A classification model for firm growth on the basis of ambitions, external potential and resources by means of decision tree induction (No. 2004027).

Littunen, H., & Tohmo, T (2003) The High Growth in New Metal-Based Manufacturing and Business Service Firms in Finland. In Small Business Economics (Vol. 21, pp. 187–200)

Loasby, B. J. (1998). The organisation of capabilities. Journal of Economic Behavior & Organization, 35(2), 139-160.

Lumpkin, G. T., & Dess, G. G (2001) Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. Journal of Business Venturing, 16(5), 429–451

Maksimovic, V., Demirgüç-Kunt, A., & Ayyagari, M. (2006). How important are financing constraints? The role of finance in the business environment.

Mansfield, E. (1962). Entry, Gibrat's Law, Innovation, and the Growth of Firms, American Economic Review, 52 (5), 1023-1051

Marris, R. (1964). Motives and Morals. In The Economic Theory of 'Managerial'Capitalism (pp. 46-109). Palgrave Macmillan UK.

Markman, G. D., & Gartner, W. B. (2002). Is extraordinary growth profitable? A study of Inc. 500 high-growth companies. Entrepreneurship theory and practice, 27(1), 65-75.

Mason, C., & Brown, R (2013) Creating good public policy to support high-growth firms. Small Business Economics, 40(2), 211–225

Mateev, M., & Anastasov, Y. (2010). Determinants of small and medium sized fast growing enterprises in central and eastern Europe: a panel data analysis. Financial Theory and Practice, 34(3), 269-295.

McDougall, P. P., Covin, J. G., Robinson, R. B., & Herron, L. (1994). The effects of industry growth and strategic breadth on new venture performance and strategy content. Strategic Management Journal, 15(7), 537-554.

McKelvie, A., & Wiklund, J. (2010). Advancing firm growth research: A focus on growth mode instead of growth rate. Entrepreneurship theory and practice, 34(2), 261- 288.

Megaravalli, A. (2017). Estimating growth of SMES using a logit model: Evidence from manufacturing companies in Italy. Management Science Letters, 7(3), 125-134.

Megaravalli, A. V., & Sampagnaro, G. (2017). THE VALIDITY OF GIBRAT LAW: EVIDENCE FROM A PANEL OF SELECTED INDIAN FIRMS. Academy of Accounting & Financial Studies Journal, 21(2).

Mendelson, H. (2000). Organizational architecture and success in the information technology industry. Management science, 46(4), 513-529.

Michaelas, N., Chittenden, F., & Poutziouris, P. (1999). Financial policy and capital structure choice in UK SMEs: Empirical evidence from company panel data. Small business economics, 12(2), 113-130.

Moreno, A. M., & Casillas, J. C. (2007). High-growth SMEs versus non-high-growth SMEs: a discriminant analysis. Entrepreneurship and regional development, 19(1), 69-88.

Moreira, D. F. (2016). The microeconomic impact on growth of SMEs when the access to finance widens: evidence from internet & high-tech industry. Procedia-Social and Behavioral Sciences, 220, 278-287.

Mowery, D. C. (1983). Industrial research and firm size, survival, and growth in American manufacturing, 1921–1946: An assessment. The Journal of Economic History, 43(4), 953-980.

Mueller, D. C. (1972). A life cycle theory of the firm. The Journal of Industrial Economics, 199-219.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of financial economics, 13(2), 187-221.

Nelson, R. R., & Winter, S. G. (1982). The Schumpeterian tradeoff revisited. The American Economic Review, 72(1), 114-132.

Nicholls-Nixon, C. L. (2005). Rapid growth and high performance: The entrepreneur's "impossible dream?". The Academy of Management Executive, 19(1), 77-89.

Paglia, J. K., & Harjoto, M. A. (2014). The effects of private equity and venture capital on sales and employment growth in small and medium-sized businesses. Journal of Banking & Finance, 47, 177-197.

Park, S. H., & Luo, Y. (2001). Guanxi and organizational dynamics: Organizational networking in Chinese firms. Strategic Management Journal, 22(5), 455-477.

Penrose, E. T. (1959). The theory of the growth of the firm. New York: John Wiley & Sons.

Penrose, K. W., Nelson, A. G., & Fisher, A. G. (1985). Generalized body composition prediction equation for men using simple measurement techniques. Medicine & Science in Sports & Exercise, 17(2), 189.

Penrose, R. (1989). Difficulties with inflationary cosmology. Annals of the New York Academy of Sciences, 571(1), 249-264.

Penrose, R., & Hameroff, S. (1995). What 'gaps'? Reply to Grush and Churchland. Journal of Consciousness Studies, 2(2), 98-111.

Petersen, M. A., & Rajan, R. G. (1994). The benefits of lending relationships: Evidence from small business data. The journal of finance, 49(1), 3-37.

Petersen, M. A., & Rajan, R. G. (1995). The effect of credit market competition on lending relationships. The Quarterly Journal of Economics, 110(2), 407-443.

Porter, M. E. (1980). Competitive strategies. New York.

Rajan, R. G., & Zingales, L. (1996). Financial dependence and growth (No. w5758). National bureau of economic research.

Reid G (1995) "Early Life-cycle Behaviour of Micro-Firms in Scotland", Small Business Economics, 7(1), 89-95.

Ricardo, D. (1817). On foreign trade. Principles of political economy and taxation.

Roland, G. (2000). Transition and economics: Politics, markets, and firms. MIT press.

Ross, S. (2003). Westerfield, Randolph W. Jordan, Bradford D.
Rumelt, R. P., & Wensley, R. (1981). In Search of the Market Share Effect. Paper presented at the Academy of Management Proceedings.

Saffu, K., Walker, J. H., & Hinson, R. (2007). An empirical study of perceived strategic value and adoption constructs: the Ghanaian case. Management Decision, 45(7), 1083-1101.

Sampagnaro, G (2013) Predicting rapid-growth SMEs through a reversal of credit-scoring principles. International Journal of Entrepreneurship and Small Business, 18(3), 313

Samuels, J. M. (1965). Size and the growth of firms. The Review of Economic Studies, 32(2), 105-112.

Schiffer, M., & Weder, B. (2001). Firm size and the business environment: Worldwide survey results (Vol. 43). World Bank Publications.

Schmitz, H. 1995. "Collective Efficiency: Growth Path for Small Scale Industry",
The Journal of Development Studies, 31(4), pp. 529-566.

Schreyer, P. (2000). High-growth firms and employment.

Schumpeter, J. A. (1934). The Theory Of Economic Development Harvard Uni. Press, Cambridge, MA.

Schumpeter Capitalism J.A., socialism and democracy McGraw-Hill, New York (1942)

Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. Small business economics, 33(2), 141-149.

Singh, A., & Whittington, G. (1975). The size and growth of firms. The Review of Economic Studies, 42(1), 15-26.

Sleuwaegen, L., & Goedhuys, M. (2002). Growth of firms in developing countries, evidence from Cote d'Ivoire. Journal of development Economics, 68(1), 117-135.

Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. The American economic review, 71(3), 393-410.

Stremersch, S., & Tellis, G. J. (2004). Understanding and managing international growth of new products. International Journal of Research in Marketing, 21(4), 421-438.

Stuart, T. E. (2000). Interorganizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry. Strategic management journal, 791-811.

Snodgrass, D. R., & Biggs, T. (1996). Industrialization and the small firm: Patterns and policies. International Center for Economic Growth: Harvard Institute for International Development.
Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. The American economic review, 71(3), 393-410.

Storey, D. J (1994) Understanding the Small Business Sector. Thomson Learning EMEA
Sutton, J (1997) Gibrat's legacy. Journal of Economic Literature, 35(1), 40–59

Teece, D. J. (1996). Firm organization, industrial structure, and technological innovation. Journal of Economic Behavior & Organization, 31(2), 193-224.

Tucker, J., & Lean, J. (2003). Small firm finance and public policy. Journal of Small Business and Enterprise Development, 10(1), 50-61.

Van der Wijst, D. (1989): "Financial structure in small business. Theory, tests and applications". Lecture notes in economics and mathematical systems, n° 320, Springer –Verlag

Variyam, J. N., & Kraybill, D. S. (1992). Empirical evidence on determinants of firm growth. Economics Letters, 38(1), 31-36.

Verbakel, V. (2005). Groeideterminanten van Belgische ondernemingen (Master's thesis).

Verdoorn, J. P. (1949). On the factors determining the growth of labor productivity. Italian economic papers, 2, 59-68.

Wagner, J (1992) Firm size, firm growth, and persistence of chance: Testing GIBRAT's law with establishment data from Lower Saxony, 1978-1989. Small Business Economics, 4(2), 125–131

Wagner, Joachim (1994) "Small Firm Entry in Manufacturing Industries: Lower Saxony, 1979-1989," Small Business Economics, 6(3), 211-224

Wang, L., & Wang, S. (2011). Cross-border venture capital performance: Evidence from China. Pacific-Basin Finance Journal, 19(1), 71-97.

Wang, Y. (2016). What are the biggest obstacles to growth of SMEs in developing countries? – An empirical evidence from an enterprise survey. Borsa Istanbul Review, 16(3), 167-176.

Weinzimmer, L. G. (2000). A replication and extension of organizational growth determinants. Journal of Business Research, 48(1), 35-41.

Wernerfelt, B. (2013). Small forces and large firms: foundations of the RBV. Strategic Management Journal.

Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. Small business economics, 13(1), 27-56.

Weston, J. F., & Copeland, T. E. (1998). Managerial Finance, 2 nd UK Edition.

Weiss, C. R (1998) Size, Growth, and Survival in the Upper Austrian Farm Sector. Small Business Economics, 10(4), 305–312

Weiss, M. (2009). Aufbau eines Konzeptes zur ressourcenorientierten Messung des Diversifikationsgrades (1. Aufl. ed.): Berlin : Pro Business.

Yasuda, T (2005) Firm growth, size, age and behaviour in Japanese manufacturing. Small Business Economics, 24(1), 1-15.

Yang, C. H., & Huang, C. H (2005) R&D, size and firm growth in Taiwan's electronics industry. Small Business Economics, 25(5), 477-487

Zaheer, A., Gulati, R., & Nohria, N. (2000). Strategic networks. Strategic management journal, 21(3), 203.

Zia, B. H. (2008). Export incentives, financial constraints, and the (mis) allocation of credit: micro-level evidence from subsidized export loans. Journal of financial economics, 87(2), 498-527.