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OVERCOMING CAPITAL CONSTRAINTS AND CHALLENGES OF FAST GROWTH AS AN IT SME

Master's Thesis within Business Administration

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Abstract

Problem: High wage countries depend on SME's to lower unemployment, to trigger economic growth and to utilize the 'knowledge waste' created by large investments in human capital. However, due to their limited access to capital markets SME's are seen as unfavourably dependent on their own generation of internal funds to grow. Among SME's, IT firms are seen as most representative for this struggle, since they have i) a bad reputation within the public and institutional sector due to the dot-com era, and ii) assets with low collateral value (e.g. immaterial assets, human capital, knowledge, prototypes and ideas that all have unknown, unsecure and hard to predict second-hand or future values). Despite these unfavorable characteristics, some IT firms are growing considerably fast. What can we learn from them?

Purpose: Describe the financial situation of IT SME's. Investigate how those IT firms that are fast growing have grown and financed their growth, and how they have managed the effects of growth.

Method: Due to the nature of the purpose a mixed method research approach was adopted. The quantitative investigation aimed at describing their financial situation and took the form of a statistical analysis of the entire IT firm population, using data from the Swedish database 'Affärsdata'. The qualitative approach took the form of telephone interviews with a sample of fast growing IT firms, to get closer to the reasoning behind their growth and it's financing. This research approach enabled cross referencing, strengthening some of the empirical evidence found.

Conclusion: Evidence was found on IT firms growing with assets of less collateral value resulting in low amounts of long term debt. Indications were found on the traditional life cycle perspective regarding SME finance has to be changed to fit IT firms; after surviving the first years of internal funding and years of overdependence on short term debt, they reach a stage (e.g. in a financial crisis, facing international expansion, or substantial R&D costs) when financial assistance is needed. Indications were also found on IT firms operating in a highly unpredictable environment demanding advanced cash management routines that today are not prioritized in favor of growth. To handle this, and to reach financial assistance when needed (most likely by involving a risk capitalist in exchange for firm ownership), those firms showing stability (i.e. through low personnel turnover, high profitability or a large cash buffer) seem to have been more successful.

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1 Introduction

Small and medium sized enterprises (SME's[1]) compose 99, 9 % of all companies in Sweden (Statistics Sweden, 2009), and is considered a main driver of employment and growth not just in Sweden but for the entire European region (Swedish ministry of Industry, Employment and Communication, 2009; EIM 2009). In the European Union, 2002 – 2007, SME's accounted for 67 % of total employment and contributed to 84 % of all employment growth (EIM, 2009). However, their contribution to labour productivity (value added) is lower than their contribution to employment. Cold fact that can be explained by the average SME being too small to capitalize on economy of scale, that its personnel is not as qualified, or that it is less capital intensive (EIM, 2009). It is therefore imperative that focus is set on realising and exposing these limitations, not only in Sweden but for most European countries with focus on education, research and development, and knowledge as competitive advantages. SME's are the key in the pursuit of actually capitalizing on these investments, and faster change into a knowledge-based economy. Since large companies cannot utilize all the human capital produced today it leads to a significant waste. However, SME's have the capacity to step in, and to lower unemployment and trigger stagnant economic growth. They just need more capital in order to attract qualified personnel that can form as basis for growth (EIM, 2009). In addition, the European Union have acknowledged the ability to stimulate SME growth as the main driver of European prosperity. Incorporated as a primary goal within the Lisbon strategy (2000) and further outlined in the member states policy framework 'Small Business Act for Europe' (2008) the work to increase SME access to credit has clearly began.

However, the emergence of political schemes like these is, at least from an external perspective, a late awakening to a well known problem. SME's have historically always encountered resistance when trying to obtain capital from external actors (McMillan Committee on Finance and Industry, 1931; Wilson Committee, 1979), giving rise to the expression 'financial-gap'. A firm facing this gap is said to have made maximum use out of short-term finance, without being big enough to access the long-term finance from capital markets. Due to the high fixed cost and an institutional unwillingness to take small holdings, small firms are also viewed as prohibited from making new issues. Regarding debt finance, banks seem to limit their lending to the short- to medium term and only giving access to smaller amounts for higher charges (Fazzari, Hubbard, Peterson, 1988; Keasey and McGuinness, 1990). From an outside perspective, small firm growth seems to be heavily dependent on the reinvestment of annual free cash flow.

As of today, decades later, the very same issues appear to reflect and aggravate the financial situation of the SME's. They still experience a lack of external finance, and feel restricted and strained in their operations and growth (Berger and Udell, 1998). As shown by Beck et al. (2004) they also use less bank finance, development finance, and equity, but more informal sources of finance like friends and family. These results confirm what has been known for years, that smaller firms meet higher costs since they in general are more volatile and can offer less collateral. A year later (2005) the same authors also found that SME's are severely affected by these financial constraints, resulting in twice the negative effect on growth as compared to larger firms with similar difficulties.

The dynamic economy of today makes it even worse for SME's. Although not yet scientifically proven it is safe to say that the recent financial crisis have negatively affected

[1] SME is defined as a company with between 0 – 249 employees, and a sales turnover between 0 – 50 million € according to European Union standards (European Commision, 2010).

SME's access to capital (EIM, 2009). Due to their difficulties in entering the capital markets and, consequently, heavy reliance on bank finance, they have become vulnerable to credit crunches and recessions. '*Such difficulties could affect not only weak companies without cash buffers, but also healthy companies that will find themselves facing a sudden shortage or even unavailability of credit*'. Fast growing SME's will inevitably, due to over reliance on short term debt, also increase the risk of illiquidity. EIM (2009) especially emphasize the importance of researching fast growing SME's, since '*they are important tools to reach the goals set in the frame of Lisbon agenda*'.

2 Problem statement

We can see the extent to which countries, especially high wage countries, depend on SME's to lower unemployment, to trigger economic growth and to utilize the 'knowledge waste'. However, due to their limited access to capital markets SME's are seen as unfavourably dependent on their generation of internal funds to grow. It is also apparent that SME's are severely affected by these capital constraints, and that fast growing companies (perhaps the most important group) are facing high risks of illiquidity. In this paper, focus will be set on small and medium sized IT firms[2], identified as most representative for the SME financial struggle, and as having potential to become a major contributor towards this particular development of knowledge based economic growth (Oakey, 1993; Jones-Evans and Westhead, 1996). The reasoning behind assuming that IT firms have severe difficulties with obtaining external finance is not only relying on their size, but most due to the following characteristics[3]: IT firms have i) a bad reputation within the public and institutional sector due to the dot-com era, and ii) assets with low collateral value (e.g. immaterial assets[4], human capital, knowledge, prototypes and ideas that all have unknown, unsecure and hard to predict second-hand or future values) found to be negatively correlated to debt (Asgharian, 1997).

However, despite displaying these problematic features there are some companies that manage to obtain sufficient financing to enable a fast growth (Business Region Göteborg, 2009). Not only does it seem they are obtaining finance against all odds, but their growth and profitability is as vital for their own long term survival as for European prosperity. According to Davidsson (2005) the crucial relationship between these two factors, growth and (growing with) profitability, is surprisingly almost a forgotten one within research. Hence attention must be put on trying to unravel the effects of fast growth and analyze how these best can be managed. Maybe we can learn something from these firms; spot common obstacles or successful strategies in their growth process and it's financing?

Seeing that IT firms and their financial constraints is a seemingly untouched research area, and for this paper not to rely on assumptions, their financial situation first needs to be described. Subsequently, this research intends to investigate how fast growing[5], small and

[2] In this paper IT firms are identified as computer consultants and computer programmers according to the Swedish Business Index (SNI).

[3] For a more comprehensive description of these problematic features and the reasoning behind it see Appendix I.

[4] Immaterial assets are defines as '*identifiable non-monetary assets without physical substance used for production or supply of products or services*' (Swedish Accounting Council).

[5] In this paper a fast growing company is defined as realizing at least 20 % average annual growth (sales and assets) over a three year period (Ahmad and Rude Petersen, 2007).

medium sized IT firms finance their growth and manage its effects. Overall, in contrast to conventional capital structure and growth research, this study will not emphasize the past and consider growth as the end goal by searching for factors that solely foster or hinder it. Instead focus will also be set on unfolding common success factors or challenges that come with the process of growth and it's financing in the dynamic economy of today – a process that possibly could be a sporadic and continuously changing firm strategy. **Consequently, the purpose of this study is to:**

- Describe the financial situation of IT SME's (financial situation).
- Investigate how those IT SME's that are fast growing have grown and financed their growth (growth and its financing).
- Investigate how those IT SME's that are fast growing have managed the effects of growth (managing the effects of growth).

The three headings displayed in parentheses after each bullet point above will guide you through the remaining parts of the study.

3 Theoretical framework

To show some of the possible determinants of firms' capital structure, further describe why SME's face a more problematic financial situation, and describe some of the benefits and costs with different financial choices, capital structure theory is being adopted. This particular body of literature was originally a result from studies on large manufacturing companies (Ang, 1991), but has during the last two decades also been exposed to thorough testing and consequently supplemented to fit an SME reality. Below the development of this particular literature is described, only considering the main contributions with emphasize on SME's.

However, whilst capital structure analysis reflects past aggregated data at a moment in time, it has no power to predict the future or render a deeper understanding of the process of growth and it's financing. Hence, growth strategies, financing possibilities and associated trade-offs relevant for SME's to consider within this context are presented.

To grow with profitability you also need to manage the effects of growth. Hence the costs of growth along with relating areas of current thinking carrying a potential to enlighten and further depict the phenomena in focus will be presented. Towards the end of every section of the theoretical framework, the theories will be operationalized into questions explaining its fit and usage within the investigation process.

3.1 Financial situation

Modigliani and Miller (M & M) laid the foundation to what was to become the theory of firms' capital structure. Their first 'irrelevance theorem' (1958) stated that in a perfect market a firm's choice of finance does not affect its value, since the effect of cheaper debt will be matched by an equal increase in cost of equity resulting in an unaffected cost of capital. The message was for management not to spend any time examining the right side of the balance sheet, but instead focus on the value adding left side. Since they outlined where capital structure theory is irrelevant, others were inspired to explore when and how it in fact is relevant (i.e. in non perfect markets). Even M & M modified their own theory in

1963 when they described the 'tax shield' as an advantage of debt finance that could elevate firm value, since interest is tax deductable. Why then, are firms not a 100% debt financed?

The first cost associated with debt finance are bankruptcy costs; the additional legal expenses, decreasing sales, increasing costs of production, and losses in value due to forced fire sales, that comes with a firm's bankruptcy or reorganization. These costs make firms less benevolent towards leverage and financial institutions more careful lending (Robichek and Myers, 1965). More recent studies all agree that these costs relatively decrease with firm size, making bankruptcy costs more severe for SME's (Van der Wijst and Thurik, 1991). Myers continued on his own to describe another cost, called underinvestment caused by debt overhang (1977). Highly levered firms will find it hard to finance positive net value projects (NVP's) since existing creditors deny further lending to limit exposure, and junior creditors (in a negative scenario) will only finance the repayment of more senior debt. To generalize, firms primarily valued on its expected future cash flow will find the cost of underinvestment to be substantial, and mature firms with limited growth opportunities will find the benefit of the tax shield to outweigh this cost. The choice between the benefit of debt (tax shield) and cost of debt overhang (underinvestment) is called the static trade-off.

In 1976, Jensen and Meckling portrayed the principal-agent relationship as another cost affecting firms' choice of finance. These so called agency costs arise from management not always performing in a value maximizing way (emphasizing reinvestment of free cash flow to increase power instead of dividend), forcing creditors to invest in monitoring devices to supervise and control their behavior. Due to the elusive nature and opaque appearance of a smaller firm, with less financial control and historical records, these costs are comparatively higher for SME's (Chittenden, Hall and Hutchinson, 1996). Myers and Majluf (1984) found evidence of the static trade-off being a second hand concern, behind the 'pecking order theory' (POT). Here a firm prefers using its internal funds, before trying to obtain debt finance, and only see new equity issues as a last resort. The behaviour was explained by information asymmetry, leading to unwanted market reactions. Without full disclosure of firms' future prospects, the market will interpret new issues as management considering the equity to be overvalued, and thus in response lower its value. The same logic explains why initial public offerings (IPO's) are found to be underpriced for smaller firms, and when carried through associated with higher cost of equity for a given risk, making external equity more expensive for SME's (Buckland and Davis, 1990). Following the POT logic profitable firms will choose internal funding and less profitable will be forced to choose external. Additionally, it entails that growth might be limited to match firms' generation of internal funds.

Before moving on to SME growth considerations, it can be intuitive to see how their financial situation limit and affect them through a life-cycle perspective. Early on firms are seen as almost entirely dependent on owners' equity which limit their chances of really seizing all opportunities and grow. After surviving the first years of underinvestment they can start making use of trade credit and short-term debt[6]. However, due to lack of long term debt[7] and stock market quotation, rapid growth at this stage could severely hurt the liquidity of the firm (Weston and Brigham, 1981). Michaelas et al. (1999) take a similar standpoint when they identify the lack of long term debt to decrease a firm's chances of handling

[6] Short term debt is defined as the total debt due for repayment within one year, and it includes bank overdraft, current bank loans, and current liabilities (Michaelas et al. 1999).

[7] Long term debt is defined as the total debt due for repayment beyond one year, and it includes long term bank loans, leasing obligations, and director loans (Michaelas et al. 1999).

late payments on receivables, and thus as a result increase their dependence on short-term debt. This theoretical section will be utilized in the following way:

- **Determinants of SME capital structure:**
  Size – due to agency costs
  Age – due to agency costs
  Profitability – due to the 'pecking order theory'
  Asset structure (as a proxy for collateral) – due to agency costs
  Growth – due to the static trade-off
- **What benefits and costs of debt have they experienced?**
- **What are their preferences between: internal equity, short/long term debt, and external equity?**

3.2 SME growth and its financing

Capital constraints are uniformly considered to be the main obstruction for SME growth (Becchetti and Trovato, 2002; Riding and Haynes, 1998), but are not entirely conclusive. Bartlett and Bukvic (2001) find institutional bureaucracy to be almost as important, although not particularly in Western Europe but from a global perspective. The field of strategic management turn to the entrepreneur himself for explaining SME growth. If not restricted by his perception of what is possible, his capabilities, his ability to delegate, then his desire in form of unwillingness to grow could be the true barrier (O'Farrell and Hitchens, 1988). However, when a firm is growing there are certain trade-offs that should be considered, closely tied to the overall strategy and financial ability of a company; that is how to grow, with what speed, and how to finance it?

3.2.1 Growth strategies

Organic growth means that a firm grow without buying other existing companies, licences or products, meaning they increase/expand production or establish new plants on their own (Ansoff, 1965). Non-organic growth can for SME's take the form of mergers and acquisitions. In acquisitions one company 'swallow' another company and have the possibility to completely change its structure and processes. In mergers on the other hand, two companies normally of the same size unites under the control of one management (Gaughan, 2002). Although most literature on mergers and acquisitions (M&A) have its origin in large companies a recent study by Weitzel and McCarthy (2009) on SMEs' M&A behaviour found that: a) M&A is a more popular growth strategy among SME's than for larger firms, b) SME's are performing better in M&A deals, and c) the pecking order only partially explains SME behaviour when found that they, in comparison to large firms, use more stock and less debt and cash to pay for their M&A. The choice between organic and non-organic growth is according to Ansoff (1965) driven by cost and time. With organic growth the development of new products, the construction of new facilities, and changes to the structure of the organization are all additional costs. The same costs are associated with the non-organic growth, which also bring transaction- and acclimatization costs but it is considerably faster achieved.

There is also a third and fourth way to consider and accomplish growth, in research called to grow by internationalisation or (and) networking. Networking has itself been a prominent topic of discussion within entrepreneurship research, where some studies have linked it to firm growth (e.g. Hansen, 1995). The literature on firm growth by internation-

alisation is also a growing one. Due to today's low-cost communication and transportation of products and services, internationalisation has passed from being an alternative to growth to almost become a prerequisite, also for smaller businesses (Hurmerinta-Peltomäki, 1994) and especially for smaller countries (Julien and Ramangalahy, 2003). The relation between the two concepts is building on *'establishing and maintaining the required relationships with business partners, customers, suppliers, and governments'* (Welch and Welch, 1996). In a study by Chetty and Cambell-Hunt (2003) networks were found to be the only launching pad out of the small domestic market.

3.2.2 Growth rate

The survival rates for firms that grow are twice as big, implying that especially smaller firms can find themselves better off by growing (Phillips and Kirchhoff, 1988). On the other hand, growing too much or too fast can turn the firm into *'a victim of its own success'*, where they see their safety cash buffers being turned into working capital as demand increases (Churchill and Mullins, 2001). Consequently some firms choose to grow while others do not. Some have annual growth targets and strategies (e.g. 10% organic and 10% non-organic growth) while others sit tight and await opportunities to come. At heart of the issue, stands the trade-off between growth rate and corporate control. In some industries (e.g. technology driven or booming ones) the growth is very important to gain or withhold your market position. For an SME this can appear to be a puzzling enigma. Since internal funds in most cases are not sufficient, SME's seem to be stuck between a rock and a hard place where they either have to match their growth to the generation of internal funds and possible loose a valuable market position, or acquire an expensive stock market quotation which decreases ownership and increases chances of a leveraged buyout when the market fluctuates (Chittenden et al., 1996).

3.2.3 Growth financing

The most important financial sources for a growing SME in Sweden are owners' equity (internal financing), external finance in the form of debt, new issues, venture capital, and institutional funding. Following the above reasoning there seem to be a connection between firm growth, its choice of financing, and risk. Hence the following considerations can prove to be useful. According to CONNECT (2005):

Internal financing. Generally, an entirely internally financed company is a slow moving company with a stable balance sheet that most definitely will stand solid when the market fluctuates. Yet at that time it might prove to have the capacity to take advantage of discounted acquisitions, and have spasmodic growth. However, when continuous or high growth is preferred, an SME is almost without exception forced to seek external capital.

External financing. External financing is not for free. Debt is offered by banks and financial institutions, but only in exchange for collateral or personal guarantees. On the other hand, if you are granted a loan they ask for no firm influence during the contract, but failure to comply with repayment obligations leads to default. Venture capital stands in contrast to debt, and carries no demands of collateral security, repayment and risk of default. Instead a venture capitalist becomes a joint-owner of the firm (the original owners' percentage share of ownership decrease), and with superior expertise try to bring value quickly to the company during a predetermined time, before exiting. Venture capitalists can enter anywhere within a firms lifecycle (early, expansion or mature). The last source of finance, institutional funding, is in many times a forgotten one. It demands less collateral security then debt, no repayment, and wants no influence on the management of the company (although the project funded needs to be carried through according to a contract). On

the other hand, in contrast to venture capital, it does not cover the capital needs fully but needs to be jointly-funded. However, to receive any of the above sources of external capital, a good, sound, and well written/presented business plan is needed.

3.2.4 Lending technologies

To be able to obtain finance it is essential to actually know the reasoning behind it, and the criteria that need to be fulfilled. In the pursuit of reaching the other side of external financing - banks and financial institutions, and search for possible ways to borrow money the following lending technologies are found. Bear in mind, the technologies are not exclusive of one another but might be used in combination on a regular basis. However, one is always dominating. According to Berger and Udell (2006):

Financial statement lending. Primarily based upon the financial strength of the borrower, as communicated by its' financial statements. This information is required to be scrutinized by a creditable accounting firm according to widely accepted standards. The contract itself can contain additional agreements (e.g. collateral) but should primarily be valued based on the expected future cash flow of the borrower.

Small business credit scoring. Collects information about the owner's credit history, obtained from consumer credit bureaus, and combines it with SME data from commercial credit bureaus. It is a fairly new technology, associated with credits up to 500 000 SEK, high interest rates (due to borrower opacity), and are generally not performed by banks.

Asset-based lending. Collateral is used as a secondary source of repayment in many of the lending technologies, but is here the primary source rather than overall firm creditworthiness. The technique is usually used to finance working capital needs and inventory, and the credit limit is calculated with a formula extracting the liquidation value of working capital (measured daily) and inventory (measured weekly/monthly). The collateral value of pledged assets should always exceed the credit exposure.

Factoring. Similar to asset-based lending as it puts priority on the value of an underlying asset rather than firm risk. Differences include just financing accounts receivable, and actually selling the underlying asset (account receivable) to the lender, usually along with outsourcing of credit control, billing and collection activities. Focus is somewhat shifted from the creditworthiness of the borrower to the obligor.

Fixed-asset lending. In here the underlying takes the form of a long-lived asset not normally sold (e.g. machines, real estate). Unlike similar technologies the underlying can be identified by an identification number and pledged securely with a lien. This removes the risk of asset transfer which facilitates the monitoring of collateral known to be significant among asset-based loans. The credit is based upon market value of the asset (with a ratio less than one) and maturity is set below the lifespan of the asset, with a contract structure of periodical amortization. Failure to amortize will lead to default on the loan (payment monitoring).

Leasing. Within leasing the lender (lessor) is the actual owner of the asset usually being equipment, vehicles or real estate. The lessor then simultaneously enters into a leasing (rental) contract with the borrower (lessee). The contract contains a schedule of payment details and usually an option at maturity for the lessee to purchase the asset at a specified price. Leasing, just like other technologies that base lending decision upon asset value, is a good alternative for opaque firms.

Relationship lending. This technique relies on soft information gathered over time by the loan officer's continuous contact with the SME. This soft information spans over all dimensions of the firm and may even include its future prospects as identified by suppliers, customers, or similar businesses.

Trade credit. Trade credit is not offered by financial institutions in the same sense as previous lending technologies, but included due to its importance for SME financing. In the US trade credit amounted to 33% of all debt used (1998), similar to the exposure of commercial banks. Furthermore, it cannot be classified either as an asset-based, performance-based, or relationship-based lending technology, but rather a combination of them all. Credit managers (lending) usually assess financial statements and more quantitative credit scoring along with soft information and mutual trust. Researchers have found the following benefits to be associated with trade credit: suppliers have an advantage when evaluating their customers' ability to pay (by offering discounts for fast payments), trade credit can be seen as a signal of market trust and expectations, it is negatively related to strategic defaults, and it seem to benefit fast growing firms facing financial constraints (since suppliers some time extend credit in contrast to banks). This theoretical section will be utilized in the following way:

- **Why have they decided to grow, and why at that specific growth rate?**
- **What growth strategies have been employed?**
- **What organizational changes has it resulted in?**
- **To what extent have they experienced capital constraints?**
- **What financial sources have been exploited and why, to what investments, and how did they obtain it?**
- **Are/were they aware of how banks and financial institutions reason about lending them money?**

3.3 Managing the effects of growth

Firm growth is repeatedly equated with success. However, it can lead to several undesirable effects or challenges if not carefully planned. Growth brings organisational change in the form of new routines and practises that need to be implemented, even new facilities that after a while can force a total restructuring (Davidsson et.al., 2005). To be successful with a dynamic firm like that, within an increasingly more dynamic economy, SME's ability to adapt routines and measure their current position (e.g. financial or non-financial objectives to obtain finance, market position, future financial ability and needs, potential threats and pitfalls) and take swift actions accordingly might be the difference between success and failure.

3.3.1 Cost of growth

Ernst (1984) recognises the continuous waves of inflation and unemployment for obstructing business planning. Conventional measures and methods within financial accounting were never constructed to guide managers in highly dynamic environments, leading to an insufficient growth planning. To prevent one of the most imminent consequences of high growth in a dynamic economy from happening, that is a liquidity squeeze, he instead argued for the combining of balance sheet and sales data. By doing so a company could relate its growth to liquidity and financing, to spot problems and take strategic measures in time.

Churchill and Mullins (2001) took a similar focus but also developed an exact way to calculate a firm's capability to grow on internally generated funds, for managers to use as a strategic tool when trading off the benefits and costs of future growth. With no doubt there appear to be ways to calculate the cost of future growth.

3.3.2 Flexibility

Another concern for growing firms in a dynamic environment is the increased risk carried by inflexible investments. This is of growing concern since by not investing in flexibility, or incorrectly value the return of flexible assets, can lead to future losses or rejection of lucrative investments either internally or externally when reaching for financial assistance. In response to recent decades' increasingly dynamic economy, the conventional but rather static 'net present value' technique (NPV) has been complemented by 'real option analysis' (ROA). In contrast to NPV, ROA has the potential to add value to an investment that carries flexibility. If a manager can revise, adapt, or adjust already made investment decisions as new information about the reality is released sometime in the future, some of the risk inherent in the project diminishes. Flexibility is an important concept of today, independent of the nature of the investment (e.g. human capital, fixed-assets), but particularly in rapidly changing, high technology, and hard to predict industries (Trigeorgis, L. 1993). So far no evidence, explaining a firms' ability to obtain finance by relating it to flexibility in investments has previously been searched for or found, to the knowledge of the author.

Following the above examples there are reasons to believe that firms being able to 1) accurately measure their current position, 2) budget and with flexibility plan for the future, and 3) balance strategic goals with present resources and future financial needs, will realise a more successful growth. This sense of current thinking can be exemplified and further strengthened by the increasing use of the tool 'Balanced Scorecard' (BSC), which in contrast to the old budget offers a way to concretize more long term strategic goals (with or without financial character). According to a recent survey by Bain and Company (2009) 53 % of the firms worldwide use BSCs on a regular basis. However, Speckbacher et al. (2003) recognized an inconsistency among the usage of BSC, since it during the years has evolved in various directions. Some use it as a strict measurement tool without the more transcending characteristics for which it was intended. This inconsistency can also be connected to the effects of using BSC, since it tends to be positively related to its strategic fit in the firm, and consequently is more than just a strict measurement tool (Braam and Nijssen, 2004). BSC is found to create value by a) translating strategy into clear objectives, b) indicating firm position and guiding and directing management efforts, and c) connecting firm resources to its strategic goals (de Geuser et al., 2009). No evidence, explaining a firms' ability to obtain finance by relating it to firm financial or non-financial measuring techniques has previously been searched for or found, to the knowledge of the author. This theoretical section will be utilized in the following way:

- **How do they handle growth; measure position, choose direction, and assess the resources needed?**
- **What problems or threats (and at what point in time) can be associated with their growth and its financing? How did they solve them?**
- **Have they adapted their growth or its financing to the increasingly more dynamic economy?**

4 Method

The population of interest is identified as computer consultants and computer programmers (IT firms) in Sweden as according to the Swedish Business Index (SNI code 62010 and 62020). From this group companies with between 10 – 249 employees will form the population. Micro sized companies are excluded from this investigation since they are assumed, to a greater extent, to have the desire to either stay small or be highly dependent on the owners' private financial and entrepreneurial history when reaching for external capital. Furthermore, firms that only partially can be categorized as IT firms (i.e. perform contradictive activities), and non-active firms were removed from the population.

4.1 Abductive method

When conducting research it is common to choose between the use of inductive or deductive reasoning. Simply, with induction the researcher moves from empirical observations to conclusions in order to develop theories. In contrast, a deductive method originates from theories that, together with existing knowledge, are tested empirically and either accepted or rejected. However, in reality the two rarely appear in their purest form. The result is a method that uses both deduction and induction, known as abduction. Most often abduction starts with induction and use deduction to test the findings. (Patel & Davidson, 2003).

Yet, in this study both induction and deduction is used as a starting point; deduction tests possible determinants of capital structure and induction explores debt levels and key ratios that together form a statistical description of the financial situation for the IT firms. This study than seek explanations to the findings, just like the classic description of an abductive method want to test findings, but with the use of interviews instead of statistical hypotheses testing. Furthermore, the interviews are also used inductively, to create theories that possibly can be 'tested' by cross referencing to the statistical description of their financial situation. Obviously, this philosophical standpoint entails a mixed method research approach.

4.2 Mixed method approach

According to Tashakkori and Teddlie (2003) different methodological strategies may be adopted for different purposes in a study. Since this study relies on the 'assumption' that IT firms on average are financially constrained, this must be statistically analysed using a quantitative method. Quantitative methods are also by far the most common research strategy within capital structure research; some academic circles still frown upon the 'soft values' extracted from qualitative research in comparison to statistical facts and hard conclusions (Parker and Kozel, 2004). However, during the 1990's qualitative studies began to draw attention as it complemented some of the previous statistical findings by bringing insight statistics could not (Matthews *et al*, 1994). Michaelas *et al.* (1998) also identify that qualitative studies can be especially fruitful when investigating capital structure of SME's, since the individual managers' risk taking propensity, motivations and attitudes are not easily quantified and may have a major impact on how they choose to finance their firms. Although mixed method approaches, that combine two or more methodological approaches in order to cross reference or triangulate (i.e. further strengthen empirical findings), have been successfully employed for the last 30 years it is even less common within capital structure research than just using a qualitative approach. The decision to still use it in this particular study is not only based on the fact that the specific features of the purpose demand it, but also since it brings reliability and validity to the findings. According to Parker and Kozel (2004) the quantitative component of a mixed method approach ensures reliability and representa-

tiveness, while the qualitative part add validity by ensuring that the questions being asked are understood and appropriate for the phenomena in focus, as it attempts to approach all the 'why' questions many times left untouched. Furthermore, they recognise that since a quantitative strategy seeks uniformity of responses, in contrast to a qualitative strategy, it is not flexible enough to pursue unexpected responses as an opportunity to gain new insight.

The two methodological strategies will now be presented and their fit within the investigation process described.

4.3 Financial situation

To justify the discussion of IT firms in connection to capital constraints, and to enable comparison for the average reader, the financial situation of this population must be described and juxtaposed to a different line of business (SME's) not carrying the same problematic features. The chosen business is 'manufacturing of metal products' (SNI code 25), since it is considered to be a classical and well respected Swedish industry carrying assets with high collateral value.

4.3.1 Data collection.

Data was collected from the Swedish database 'Affärsdata', enabling a customized collection for the specific characteristics covering the two entire populations. The database ended up consisting of 946 active IT firms, and 619 manufacturing firms, with book value data (as augmented by Myers, 1984) representing the year of 2008.

4.3.2 Data analysis

When analyzing the database the statistical software program 'SPSS' was utilized, and the following variables were created all commonly used for this purpose (Michaelas et al. 1999; Titman and Wessels, 1988; Van der Wifst and Thurik, 1993)[8]:

DETERMINANTS
Size: Employees and total assets.
Age: 2008 less the year of incorporation
Profitability 1: Earnings after financial income / total assets
Profitability 2: Earnings after financial costs / total assets
Asset structure: Fixed assets / total assets
Growth: (Percentage increase in sales + percentage increase in assets) / 2
DEBT FINANCING
Long term debt: Long term debt / total assets
Short term debt: Short term debt / total assets
Accounts receivable: Accounts receivable / sales
Accounts payable: Accounts payable / cost of goods sold
Cost of debt: Financial expenses / (total debt – accounts payable)
FINANCIAL INDICATORS
Solvency: (0, 7 * untaxed reserves + equity) / total assets
Liquidity: (Current assets – inventory) / current liabilities

[8] A more detailed account for the reasoning behind selecting these financial indicators is available in Appendix II.

Numerous correlation tests were then performed in order to find determinants on IT firms' capital structure or explanations to their growth. Only correlations that are significant on the 0,01 level are considered and displayed in this study.

4.4 Growth, it's financing and possible effects of growth

Statistical, capital structure analysis has many advantages but can never form a complete understanding of the reasoning behind the numbers; the process of growth, its financing and the effects of growth. That is why a second methodological strategy (i.e. interviews) will be employed to complement the first, and possibly reject or strengthen some of the conclusions drawn from the quantitative data collection. As a step to facilitate this strategy (i.e. guide the interviews) and give credibility to some of the interview findings, the IT firm database will also be used to compare the normal growing (306 firms) with those that are fast growing (338 firms). This enable to cross reference interview findings from a rather small sample to statistical findings covering the entire population. To see if the same variables determining capital structure also determine firm growth the same correlation testing procedure as in the first strategy is repeated. Furthermore, to find indications of some of the possible effects of fast growth, two additional variables are created:

Productivity: Turnover / employees
Efficiency: Pre-tax profits after financial income / employees

Productivity and efficiency, are only used to compare normal versus fast growing IT firms since they are not suited for across industry analysis (see Appendix II for further reasoning). Moving on, since statistical analysis has no actual power to describe the extent of capital constraints or gain insight into the process and strategy of growth and it's financing, interviews have been performed, but with whom?

4.4.1 Sampling

Interviews with a random sample from the above described database have been performed. The sampling was performed in line with the following two criteria:

- Medium sized. Naturally larger firms have more experience and information to offer about the process of growth and what it brings to a firm at different stages in time.
- Fast growing. Since the average age is relatively low for IT firms (12 years), most of the medium sized firms have most likely realized a considerable growth. However, to further stress their need for capital and the possible effects of growth, focus will be set on those firms growing fast.

When talking about fast growing firms it is referring to the OECD definition of high growth enterprises adopted for international comparison: all firms realizing at least 20 % average annual growth over a three year period (Ahmad and Rude Petersen, 2007). Since empirical tests have shown very low correlations between different growth indicators (Davidsson et.al., 2005), this condition must hold for both asset growth and sales growth to get a more representative measure. Unfortunately, no available database allowed for continuous growth sampling, resulting in growth data from a single year. However, as a second step in the sampling, telephone calls were made to random firms within the sample to enable control against the chosen growth standard until four rewarding interviews were performed. Notably, just as many interviews had to be excluded from this study since these firms were part of a combine (e.g. computer department just executing/bearing costs from

mother firm's technological investments) and consequently were not exposed to the same financial reality as independent firms.

4.4.2 Data collection

Subsequently, in-depth telephone interviews were performed with Chief Executive Officers and Chief Financial Officers from the four sampled firms ranging from 1 – 1,5 hours. When performing the interviews a semi-structured technique was adopted to allow control against the preidentified areas of interest, but also not to interrupt the natural flow of the discussion. The interviews were preserved through detailed notes and audio recordings when allowed for, to enable repeated listening and to really preserve the tone and exact wording of the respondent for later interpretation and analysis. This way the interviewers' influence on the data collection is minimized as according to Miles and Huberman (1994). Furthermore, numerical data describing the financial situation of the sample was gathered from 'Affärsdata'. To ensure quality of data every sampled firm was offered, and preferred, complete anonymity within this study.

4.4.3 Data analysis

The qualitative data from the interviews was later compared and analyzed together with the numerical data describing the four firms' individual financial situation and its development during the years 2005 – 2008, but also by comparing to the statistical analysis in the first methodological strategy explaining their aggregated financial situation. By iteratively going from one source of information to another patterns were identified that successively could form an empirical understanding, partially accepting and in some cases rejecting both theoretical areas believed to be of importance, and result from the first methodological strategy. Some parts of the analysis also took place during the process of interviewing. As certain theoretical areas were found to be not as important as previously believed, other areas (e.g. personnel) emerged as almost decisive. These areas were obviously invited and treated in the study, and when necessary complementary phone calls were made to enable comparison of these areas as well.

4.5 Problems and weaknesses

It would have been preferred to have financial data, both for the statistical and interview analyses, that displayed more years than one and four respectively. This way capital structure changes over time (for the statistical analysis) and the process of growth and its financing (for the interview analysis) could have been identified and better described. Considering the statistical analysis (which only had data from one year) profitability and growth is probably the two variables possibly shifting from year to year giving unreliable result. Other variables such as size, age, asset structure, debt, and solvency are most likely not that affected from year to year. Considering the interview analysis on the other hand (which contained four years of data), all the sampled firms were about the same age, which is no more than 10 years. So, they were all created immediately after the dot com era, making them especially suitable for the purpose of this particular study. Furthermore, the numerical data actually described at least 40 % of their existence so far, and notably the most interesting part.

The reader should also keep in mind that some of the conclusions are drawn based on a sample of just four firms. However, when possible the conclusions are strengthened by relating to the statistical analyses covering the entire population. It is also noteworthy that certain parts of the interview findings are build on measuring effects of the financial crisis. Sine data only was available up to 2008 the entire scale of effects can obviously not be presented. However, the firms were clearly affected in the fall of 2008, which in combi-

nation with their recent memories of industry changes and firm effects most likely leads to an adequate depiction.

Furthermore, due to geographical reasons interviews had to be performed over telephone. The ideal solution would have been to sit down face to face with the respondents and go through their annual progress and the reasoning behind it from the year of incorporation until today. Now the respondents have been forced to remember up to ten year old undertakings, which is questionable. However, this study mainly analyzes large and memorable events with no need for detailed accounting, which partially should make up for this deficiency.

5 Findings and analysis

The financial situation of the IT firm population will first be described in relation to a manufacturing industry with good reputation and an asset structure of high collateral value (i.e. the metal firms) to test if they really experience a problematic financial reality. Afterwards the potential determinants of capital structure will be searched for. Subsequently, since focus mainly is on those IT firms that grow fast these firms' specific financial situation will be described relative to normal growing IT firms, and potential determinants of their growth will be searched for. This step will also facilitate and somewhat guide the interview process, and give credibility to some of the interview findings by enabling a comparison between interview- and statistical findings covering the entire population. Finally the interview material from the four sampled firms will be presented and their process of growth, its finance and the consequences of fast growth will be revealed.

5.1 Financial situation

Every number in Table 1 (page 15) entails a mean value representing IT- and metal firms in Sweden. As expected, IT firms have more employees but fewer assets, **and their assets carry considerably lower collateral value**. Looking at the profitability, IT firms are found to be better off before financial expenses (profitability 1), and still better off (but with less margin) after financial costs (profitability 2). Furthermore, IT firms realize considerably more growth but **have so far financed it with similar amounts of debt** expressing the static trade-off theory (Myers, 1977) at most being of second hand concern. However, this debt has to a much **larger extent taken the form of short term instead of long term**, but the consequences are yet at this stage unknown. As recognized earlier IT firms do have relatively higher financial expenses (cost of debt) that decrease their profitability (marginally), most likely being the result of financial institutions adding agency costs. When looking at trade credit it is apparent that **metal firms have negotiated better contracts or just have the advantage of operating in a more advantageous industry**; they have less account receivable and more account payable which both improve liquidity. The cause of this difference could be many and must be further investigated during the interviews. At last it can be noted that no differences or problems in long- or short term ability to pay off obligations (solvency and cash liquidity) exist.

Table I. IT firms versus metal firms.

Mean values (standard deviation) DETERMINANTS	IT	METAL
Employees	30,5 (31)	25(25)
Total assets (mSEK)	26 (59)	35 (14)
Age	12 (1)	19 (15)
Profitability 1	12% (55)	8% (64)
Profitability 2	10% (55)	8% (64)
Asset structure	14 % (20)	26% (25)
Growth	36% (227)	10% (39)
DEBT FINANCING		
Long term debt	3% (9)	12 % (18)
Short term debt	62% (24)	47 % (22)
Accounts receivable	17% (19)	12% (10)
Accounts payable	9% (19)	15% (10)
Cost of debt	2,4% (7)	1,7% (2,8)
FINANCIAL INDICATORS		
Solvency	33% (24)	37% (20)
Liquidity	167% (114)	151% (113)

From capital structure theory it is apparent that size, age, profitability, asset structure and growth have the power to determine the capital structure of SME's. When searching for evidence, by correlation testing, no proof of agency costs (age and size) being of importance is found. However, profitability is negatively correlated to short term debt (-0,167). **Apparently IT firms do prefer internal funds, as suggested by the 'pecking order theory', and can avoid over dependence on short term debt by being profitable**. Although agency costs are not significant when analyzing IT firms in isolation, when comparing them to metal firms (who on average are older and bigger) long term debt appear to be positively related. This is most likely the result of **financial institutions using relationship as a lending technique**, as they value age (track record) and size when appraising more long term credit worthiness. Moving on, asset structure appears to be of importance as well. It does not affect the size of leverage *per se* but rather the character of it. Since **asset structure is correlated with both long term debt (0,268) and short term debt (-0,128)** for IT firms and (0,616 and -0,449) for metal firms respectively, there is no doubt that collateral value on assets is the main reason explaining differences in debt character. **However, since the correlation is substantially stronger for metal firms it appears as IT firms have invented solutions to the problem, later to be investigated**. Furthermore, growth is, as advocated by the static trade-off theory (Myers, 1977), rejected as a determinant in light of the quantitative data.

5.2 Growth and its financing

First those IT firms growing at a normal rate will be statistically analyzed against those realizing a fast growth, to search for determinants of their growth and to see if their financial situation differs or if any indications of effects of high growth can be found. Every company within the interview sample will then be described in the context of growth and its financing, followed by a discussion and visualization of the findings. See Table III (page 20) for a numerical description on their individual financial situation and its development over the past four years (2005 – 2008).

5.2.1 Normal versus fast growth rate

The average growth for IT firms is high but the number carries a high standard deviation, meaning that some firms grow fast and others not at all. In Table II below you see that fast growing firms appear to be slightly smaller and younger. There is no correlation to size, but growth somewhat seem to be determined by age (-0,204). **This comes as no surprise as it is easier to realize growth early in the life-cycle**. Furthermore, they both grow with the same asset structure and carry the same leverage, effectively meaning that **the more 'successful' firms (in terms of growth) have realized their growth with assets of similar collateral value**. However, once again we see a difference in debt character when **fast growing firms for reasons unknown have obtained slightly more long term debt** but less accounts payable. It is also true that **the fast growing firms are somewhat more profitable (0,158), indicating that capital constraints might actually be present.** Finally, one of the more obvious characteristics carrying power to determine the growth of IT firms, that is size, will now be removed and focus will only be put on medium sized and fast growing IT firms. A group of firms that at a first glance appear be both more productive and efficient, but since the two numbers carry such a high standard deviation relative to the 'normal' growing firms, **a clear indication of a difficulty with managing the effects of growth is noted.**

Table II. IT firms growing at a normal rate versus a fast rate.

Mean values (standard deviation)	GROWTH RATE	
DETERMINANTS	Normal	Fast
Employees	35 (36)	28 (27)
Total assets (mSEK)	30 (71)	25 (43)
Age	14 (9)	10 (7)
Profitability 1	17% (27)	20% (70)
Profitability 2	16% (28)	18% (71)
Asset structure	13% (17)	13% (19)
DEBT FINANCING		
Long term debt	2% (7)	5% (10)
Short term debt	62% (20)	61% (24)
Accounts receivable	16% (10)	17% (13)
Accounts payable	12% (4)	7% (3)
Cost of debt	1,8%	2,5%
FINANCIAL INDICATORS		
Solvency	34% (20)	32% (32)
Liquidity	166% (111)	163% (85)
Productivity (tSEK)	1540 (1230)	1620 (1810)
Efficiency (tSEK)	108 (185)	124 (440)

5.2.2 Airtech

Between 2005 and 2008 they have grown from 24 to 85 employees, and they have financed it with high amounts of short term debt (see Table III on page 20). For nine years Airtech has offered products to the airline industry with a demand closely connected to the varying quantity of airline passengers. They possess offices in Sweden, the Netherlands and the United Kingdom, and have a vision of bringing flexibility and efficiency to its customers. Throughout the years they have remained private and independent without affiliations. Due to the entrepreneurial minds of the owners Airtech started out with a unique product and solid business idea that generated sufficient internal funds to support a fast organic

growth and consequently win market share before competitors could catch up. 20% has been their growth target and they have reached it every year, except 2006, by staying close to SAS at the start and (when feeling financially stronger) growing by internationalization. Today they have more than 50 different customers. However, in 2004 they realized that their platform (product) were starting to get obsolete in the ever changing market of high-technology, and needed considerable updates. For the first time since the start external financing was needed to support a delocalization of workers previously making money for the firm (externally) to, side by side with expert consultants to be brought in, just costing money (internally) for a substantial time onwards. Unfortunately the bank said no. As the CFO at Airtech phrased it,

'our bank had no understanding of our IT business at all; when we displayed our industry certificates, years of profitability and financial stability they searched only for collateral value'.

So the project was delayed for two years until no more time was left to wait, in January 2006. At this time the risk of losing long term clients due to their obsolete platform was imminent. Concurrently, the negotiations with the bank had reached a deadlock. Due to the urgency of the matter significant amounts of money was invested in to paying expert consultants from a neighboring firm, a firm they soon realized they had to acquire in order to get their full attention and the job done in time. By the end of the year Airtech knew something had to happen if they were to survive, which was why they bought a piece of real estate (collateral) and rented it out. This piece of collateral, along with detailed plans of their future business and explanations on why Airtech needed financial support, was used in a final but successful attempt to obtain debt finance and acquire the neighboring firm (40 % in 2007 and the rest in 2008) and develop the needed platform.

'*For years we had only looked towards the future and the money going in, and all of a sudden we had to consider the money going out. We were fumbling in the dark. Hopefully it was an important lesson and organizational awakening, but a lesson now being learnt*', said the CFO when looking back at 2006.

Regarding debt finance Airtech has so far not reached any long term finance but still appear as highly leveraged due to low equity and a fast growth that increase short term debt even without external financing. Their accounts receivable are all right but their accounts payable are behind industry standard. It is apparent that Airtech has grown due to entrepreneurial strength and a favorable growth strategy, without considering the debt, cost side of their business or future financial needs until forced to face its consequences.

5.2.3 FrontLine

Between 2005 and 2008 they have grown from 109 to 208 employees, and they appear to have financed it with a high profitability (keeping short term debt down) and a recent obtaining of long term debt (see Table III on page 20). For 10 years FrontLine has developed software to mobile phones and is now one of Sweden's most successful companies based on sales, organic growth and profitability. They have offices in Europe and North America and are contracted by some of the world's largest handset vendors. They try to outperform their competitors with agile teamwork that turn ideas in to profit and customer satisfaction. Due to capital constraints and a will to grow organic they have never acquired any companies, but instead focused on networking and followed their customers abroad. As an example they followed Ericsson to the USA, and created enough connections on the side to start up a steady business after completing the initial project. Despite a considerable profitability and due to the costly nature of the industry where 60 – 90 days of payment time is custom, factoring has been used as a complement to a small credit line (1 million SEK). At occa-

sions, when facing large investments, FrontLine has also persuaded customers to co-finance the project and consequently used that as leverage when negotiating financing deals. When asked about how they obtained their factoring and credit line FrontLine responded that it is a matter of being totally honest about future projections and involving your financial institution as early in the process as possible.

To stay ahead of competition in a fast changing and dynamic environment FrontLine has from the start outlined a strategy of staying flexible and agile by constantly educating their personnel, inspire to and invest in scheduled skunk work, and by trying to lead instead of following the market.

> *'Within this industry it is extremely important to have employees that are motivated enough to create tomorrow's solutions and to keep that knowledge and human capital within the firm for as long as possible. Our personnel feel so involved that they on their own initiative meet at evenings to elaborate on new techniques, stay sharp and ahead of competitors'*, the CEO proudly stated.

The biggest obstacle has been to find enough qualified personnel, which is why they decided to locate two offices in the student cities Lund and Umeå, as well as start a business in Ukraine next to the famous University in Kiev. FrontLine's strategy has been successful and their profitability has been substantial enough for them to successfully grow at a fast rate without over dependence on short term debt, at least for the first ten years. At this time however, as the CEO of FrontLine explained it,

> '*we (the entrepreneurs) had reached our maximum potential as business leaders and needed expertise and experience from a bigger player to know in what direction to grow and how to stay ahead. Our profitability was also not sufficient to support an international full scale expansion*'.

Consequently they carefully chose to involve a 'financial partner', one that offered long term support without insisting on a quick exit strategy. The private equity company, with extensive experience in developing middle sized entrepreneur-driven firms by international expansion, acquired FrontLine (65 %) in 2007. The take-over also resulted in long-term financing and working cash (liquidity) that offered stability to a non-stable environment.

5.2.4 JAVAtec

Between 2005 and 2008 they have grown from 50 to 123 employees, and they appear to have financed it with a decent profitability (keeping short term debt down) but so far no long term debt has been reached (see Table III on page 20). The firm was created in the basement by five friends ten years ago, and has since then created mobile phone platforms by using Java technology. They are today situated all over Sweden with a primary focus on its origin in the south. JAVAtec strive at being best at what they do, and try to prove it with high customer satisfaction and by contributing to open-source software creation and educational seminars within their specific field of expertise. The creators have decided to keep the ownership within the firm, and disseminated shares to every employee. This is also part of their optimistic goal of having a personnel turnover at zero.

JAVAtec's growth strategy has involved the belief in individual employees' ideas, and the courage to invest in them, to follow customers abroad and maybe most importantly to market their brand name by blogs, seminars and open-source creation. As soon as an idea becomes profitable it is released. At least until 2008 when two large business areas (re)joined forces to share costs. As a consequence the family feeling was eliminated and employees lost enthusiasm; they simply became too big too fast. Concurrently their financial department, who already was suffering with simple or non-existing routines, became overloaded. For years they were told not to focus on details and used simple spreadsheet

analysis resulting in a lack of overview and ability to scan the environment and plan for the future.

'We measured our sales and current status by calculating the number of employees being at the office not making money', the CFO explained.

From a financing point of view JAVAtec have realized their weak position in negotiating trade credit with their major clients (big players like Ericsson), who can cancel an order at any point in time and demand 90 days of payment. Additionally, they have never reached any long term finance due to assets with low collateral value but managed to avoid short term debt by being solvent and relatively liquid. The question is for how long? Furthermore, JAVAtec has managed to obtain institutional finance, described as an exhaustive administrative mission, to use for developing an enterprise system for a municipality. A successful initiative since normally they have no time (i.e. money) to start developing internally. Their goal is to be able to pay three monthly salaries to every employee before starting to develop internally, a hard thing to achieve without financial assistance.

'*In this industry it is extremely important to keep investing in research and development, but so hard in an unstable environment like ours; every month something unforeseen takes place like a contract that suddenly is cancelled simultaneously as another idea spurs into a project and another business unit is released',* the CEO comments.

5.2.5 Effectnet

Between 2005 and 2008 they have grown from 17 to 65 employees, and they appear to have financed it with high amounts of debt, both short and long term as well as favorable trade credit (see Table III on page 20). For nine years Effectnet have designed, created, installed and maintained networks for computer communication. They are situated all over Sweden and have clients like the government, municipalities, firms and real estate owners. Their business idea describes a focus on quality, operational stability and cost efficiency when customizing their products. Effectnet is actually a recreation of an older company that went bankrupt in the dot-com era, after which the owners and a handful employees decided to invest in the current business. At that time it was impossible to go to the bank who was terrified of firms just like Effectnet, and they have since then never obtained any finance except factoring from them. Instead they successfully pursued institutional complementary (50 %) finance from ALMI who carried them towards growth in their first years. ALMI is a government owned Swedish institution that aims at facilitating for business renewal and SME growth, partly using funds from the European Union. ALMI does not emphasize collateral value but instead the capacity of the business idea and managerial competence when evaluating financial assistance, and avoids directly competing with banks by having higher interest rates.

Table III. Numerical data.

DETERMINANTS

	SIZE				COLLATERAL				GROWTH				PROFITABILITY 1				PROFITABILITY 2			
	Employees		Assets (mSEK)		Asset structure															
	2005	2008	2005	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Airtech	24	85	8	23	7%	7%	3%	2%	62%	14%	46%	37%	27%	0%	33%	13%	27%	0%	32%	10%
FrontLine	109	208	32	127	3%	5%	7%	3%	97%	57%	44%	45%	40%	41%	48%	47%	33%	37%	40%	46%
JAVAtec	50	123	15	38	2%	0%	0%	0%	25%	2%	33%	77%	24%	28%	20%	9%	23%	27%	19%	8%
Effectnet	17	65	6	55	2%	20%	43%	35%	18%	180%	65%	83%	18%	24%	11%	14%	15%	23%	0%	11%

DEBT FINANCING

	LEVERAGE								TRADE CREDIT								COST OF DEBT			
	Short-term				Long-term				Accounts receivable				Accounts payable							
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Airtech	89%	83%	88%	92%	0%	0%	0%	0%	16%	16%	12%	19%	10%	8%	8%	4%	1%	0%	0%	0%
FrontLine	49%	48%	44%	14%	0%	0%	5%	36%	20%	21%	21%	26%	9%	9%	8%	3%	10%	5%	18%	0%
JAVAtec	43%	49%	47%	57%	0%	0%	0%	0%	22%	20%	21%	26%	9%	7%	8%	3%	1%	0%	0%	0%
Effectnet	72%	54%	40%	69%	3%	24%	31%	13%	10%	10%	10%	13%	13%	12%	13%	8%	4%	2%	18%	5%

FINANCIAL INDICATORS

	FINANCIAL STATUS								PROFIT MARGIN				PRODUCTIVITY (tSEK)				EFFICIENCY (tSEK)			
	Solvency				Liquidity															
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Airtech	47%	16%	11%	8%	182%	112%	109%	106%	7%	0%	11%	5%	1297	1307	708	686	93	0	78	33
FrontLine	47%	50%	51%	50%	198%	197%	210%	270%	14%	17%	19%	24%	853	888	934	1179	99	139	150	285
JAVAtec	52%	45%	47%	36%	228%	203%	212%	175%	7%	10%	8%	3%	977	909	1090	879	70	93	86	27
Effectnet	23%	20%	28%	18%	129%	144%	140%	64%	7%	20%	7%	7%	860	950	1450	1580	56	183	4	96

To compensate for their higher financial costs and lower profitability (see Table III on page 20) Effectnet have rationalized their recruiting, cash management routines and always acted economically sparse. By offering trainee spots to the national working agency[9] they do not have to finance the first year of salary for the recruits, and Effectnet can carefully scan and test the workers to see if they are suited for the job. Concerning cash management they have utilized leasing extensively, intensified discussions with key suppliers to increase accounts payable (60 days for some), and since 2007 also used factoring.

> '*When I started here the trade credit was far beyond acceptance, as for many other firms within this industry. But I turned the ship around and really utilized the capabilities of staying close and build mutual trust with our key stakeholders; suppliers deliver just in time leaving our inventory almost empty, we sometimes finance investments together with our customers, and get paid in advance for big jobs and invoice on the very same day of delivery*' said the CFO who has a vast industry experience.

In 2006 Effectnet also identified the upside of strong expansion as the market progressed and knew they needed long term financing to achieve it, which is why they accepted to involve a risk capitalist for three years onwards. When looking back the risk capitalist enabled vital investments and radiated financial stability at a small cost of ownership.

'It is a balance act between ownership/independence and market expansion, but for us the choice was easy to rationalize; we are in the IT industry for God sake, we cannot stay still. All together the value of my shares have multiplied several times due to the involvement of a financially stronger player' one of the owners summarized.

5.2.6 Discussion

Based on these findings there are reasons to believe that many of the fast growing IT firms in Sweden are founder-driven, with a strong focus on technological advancement at the cost of economically sound routines. They operate in a fast and a continuously changing market where today's buzz is tomorrows must. Surprisingly the question of how to manage your personnel turned out to be of importance within this context. However, since their deviating philosophies are better treated in combination with the effects of it, a thorough discussion of its consequences will be held in the next section.

5.2.6.1 Research and development

The market conditions increase the importance of keeping the organization sharp and agile, meaning excess cash is needed to finance consultants (employees) to develop internally instead of implementing products externally. At a first glance on the population during the statistical analysis the static trade-off theory (Myers, 1976) was rejected since IT firms carried an equivalent amount of leverage as metal firms. After the interviews it is now apparent that the firms are probably not that leveraged as previously thought and that they in fact are experiencing considerable capital constraints restraining their future development (especially R&D). Their short term debt is mostly consisting of accounts payable, salaries, factoring and small credit lines; items that are not that costly resulting in a rather small costs of debt as opposed to previous assumptions.

[9] Arbetsförmedlingen.

5.2.6.2 Trust capital

Instead firms' trade-credit (trust capital) seems to have played an important role. By focusing on networking as a growth strategy they have all created fruitful relationships but it is only Effectnet that seem to have maximized the potential benefits of it. This comes as no surprise since the statistical analysis clearly showed that IT firms compared to metal firms have neglected many of the possibilities of trade finance. Since external finance in many cases have not been available, trade credit can act as a substitute. Staying close to your stakeholders can also lead to other advantages as exemplified by Effectnet and FrontLine, who managed to persuade their customers to finance development projects. This has in turn been used in negotiations towards the bank to display a definite demand of their future products. Note that Effectnet is the financially weakest firm and has displayed the lowest profitability within the sample, but still managed to achieve a considerable trade credit (e.g. they sometimes got paid in advance, their accounts receivable was even better then the metal firms). This is a clear discrepancy indicating that trade credit is being lent on other criteria than traditional financial institutions are employing. Perhaps the financial institutions also have something to learn, either by investigating trade credit or institutional financiers like ALMI.

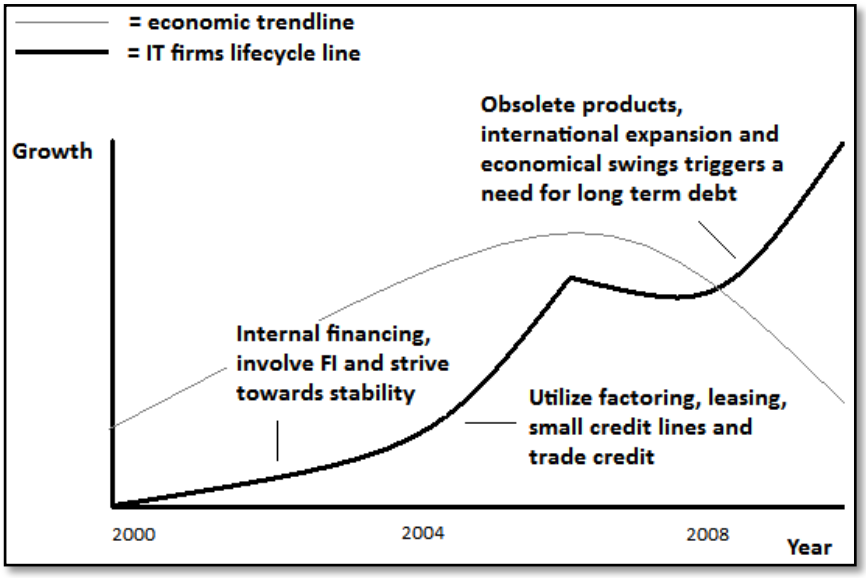
Additionally, since many of the big players in the industry seem reluctant to pay before 60 -90 days after delivery, FrontLine and Effectnet have decided to use factoring to improve their account receivables (most important item since IT firms' accounts payable almost is negligible). This, in combination with staying close to their key stakeholders seem to have giving them an advantage of displaying stability. In a fast changing environment you can try to lead the market instead of following it, but everyone knows today's position is no guarantee for tomorrow. So there are reasons to believe that firms also displaying stability will find it easier to reach external finance when needed (e.g. FrontLine and Effectnet are the only ones having reached long term finance and they both use factoring and utilize their key stakeholders).

5.2.6.3 Life cycle perspective

See Model I on page 23 that visualizes the findings. Common for the entire sample is their early pursuit in financing their growth without external assistance, in line with the 'pecking order theory' (Myers and Majluf, 1984). If they survive the start up phase, and if they have involved their financial institution and informed them about their future projects and financial needs at an early stage, and if they have achieved some sort of stability they can start using factoring, leasing, small credit lines and more extensive trade credit. This is all in line with result from previous SME research (e.g. Weston and Brigham, 1981). However after a few more years, despite having a high profitability they have all reached a stage in their life cycle where they have been forced to ask for financial support. Most likely this seems to happen when their original product is starting to hit competition and get obsolete, or when international expansion is needed. When this happened to FrontLine they assessed the situation and concluded they needed both financial support and business expertise to continue growing, which is why they decided to involve a risk capitalist (sell 65 % of the firm). Entrepreneurial enthusiasm was no longer enough. Airtech and JAVAtec on the other hand, have so far not obtained any long term finance but instead prioritized firm ownership. There are indications on long term finance and full ownership of the firm being exclusive of one another in the IT industry, resulting in effects to be further analyzed in the next part. However, if they do not involve their banks at an early stage in their life cycle, but instead show up on the day they need financing they will most likely get disappointed. Relationship lending (so far the only evidence of substitute to collateral value as seen in the statistical analysis and in the case of Airtech's bank struggle) is built up through time on trust

and knowledge of a firm's future threats and opportunities. This can be further strengthened by the statistical analysis that showed a positive correlation between size, age and long term debt.

Model I. Life cycle perspective of the IT firms.



5.3 Managing the effects of growth

In the statistical analysis it was noted that since profitability and efficiency carried such a high variance, some IT firms were having problems facing the effects of growth. By looking at the numerical data in Table III, and by comparing the sampled firms' solvency and cash liquidity 2008 to that of the total population it is apparent that Airtech and Effectnet have suffered from the effects of growth in a time of recession. They both show a better financial status before 2008, and much worse after. The same thing seems to have happened to JAVAtec's profitability, the question is why?

5.3.1 Airtech

Since the day of incorporation liquidity has been a major issue for Airtech's financial department. In the first years the firm was customizing all their products to suit the individual preference of their customers. Above that they were forced to (in their eyes) adapt to industry standards were no one was paying before 60 days of complete delivery, in some cases up to 90 days. This way of doing business was extremely capital-intensive, but manageable as long as their profitability was stable enough to support their cash buffer (cash liquidity in 2005 was 182 %) acting as a substitute to long term finance. In 2006 (with an all time low profitability of 0 %), when updating the internal platform together with expensive consultant assistance, a turning point was reached for Airtech. Changes had to be made not to, inevitably, face bankruptcy. Consequently they changed their way of doing business to, as a first stage of the customer relationship, always offer and implement a standard version of their product and, when that is paid for, customize it to fit individual needs and preferences. This lowered their accounts receivable from 16 % to 12 % in 2007. This along with

reaching financial help from the bank to acquire the neighboring firm, and being profitable again in 2007, made them capable of riding the storm.

In 2008 another storm was approaching, the financial crisis. Airtech had grown significantly in 2007 (46 %) due to the acquisition and it was difficult to keep the productivity of the employees (down from 1307000 to 686000 in 2006 - 2008). Since the IT industry in Sweden is facing a shortage of competent personnel, and it takes at least six months to teach a new recruit, Airtech struggled to keep its employees. When asked about flexibility Airtech responded that, in contrast to other industries of today, IT firms cannot use temporary employment agencies. In addition, flexibility is not even on the agenda since the industry is so erratic that no claims of flexibility can be supported with the same strength as actually proving it by being stable over time. Airtech's goal has consequently always been to reach long term finance by displaying stability over time; a high cash liquidity, a low personnel turnover, and a high profitability.

> '*So far we have not been successful. Financial institutions had no faith in us when we actually could display stability, inevitably leading to instability, at the worst possible time*' their CEO disappointedly responded.

In contrast, the CFO criticized their internal routines when reflecting over the past,

> *'we were a highly entrepreneurial firm seeking new sales and just looking towards the future. By instead looking back and identifying our historical costs and financial needs, problems and inefficiencies could have been spotted in time and possibly directed us towards a better future*'.

5.3.2 FrontLine

Due to an amazing profitability FrontLine has so far managed the effects of growth with just minor incidents. Their high growth has on the other hand forced them to prioritize among tasks; the financial department has been ordered not to focus on details but instead be guided by objectives of profitability. This focus has made them aware of the cost side of their projects, but blinded them in terms of financial planning (even basic cash flow analyses have been neglected). When looking back FrontLine realize that at least once every year they have not been able to pay short term obligations, despite having substantial cash liquidity. They explain themselves by referring to sudden bulges that arise on an annual basis, originating from quarterly/annual costs (e.g. taxes, rent, product updates, law suits, new offices/equipment), and the fact that employees get salary with just 21 days delay (every fortnight, 14 + 7 as average) and customers pay after 60 to 90 days.

As they grew bigger FrontLine quickly identified a need for long term financing to 1) straighten out sudden liquidity bulges, and 2) finance the marketing venture needed for an international expansion. Consequently they decided to be acquired by a bigger player and achieve long term financing (36 %). In 2008, despite the start of an economical downturn, they were more efficient and productive than ever, showing no signs of being effected by effects of growth.

5.3.3 JAVAtec

When the firm in 2008 merged two separate business areas JAVAtec immediately grew 77 % resulting in several negative effects: profitability fell from 19 % to 8 %, and efficiency fell from 86000 to 27000. Their personnel who previously acted as a competitive advantage when driving profitable growth by blogging and contributing to open source creation, now became uninspired, lost the 'family feeling' and sense of firm ownership that had motivated

them before. A substantial pressure was also put on their financial department who had problems handling the situation as it was.

> *'I try to plan ahead in Excel but there are so many parameters to consider; customers do not always pay, projects are normally contracted for at least five months but we only know one month for certain, business units are released, and others are merged. We had no idea of the cost side, if individual projects really were profitable'*, the CFO described.

At the same time the financial crisis unfolded and every customer demanded extended credit, and sales started decreasing. As an effect they pushed their tax payments from payday until the day of administration (a trick) resulting in decreased credit worthiness since their accountant had to report it. Consequently things had to change, so JAVATEC outsourced the collecting of debt to their bank (lowering accounts receivables from 27 % to 20 %) and contacted a management consultant to either develop or assist in finding cash management software. With this software JAVAtec aims at following up individual projects and to perform a more precise financial planning. To do this they have acknowledged the need to (on a daily basis) integrate account balances, project proceedings and their expected time to completion (including risk and probabilities), time reports, employee schedules, current liabilities, expected R & D, expected maintenance costs, and customers' credit worthiness.

5.3.4 Effectnet

As a result of capital constraints and lower profitability than the rest of the sample, Effectnet has focused on cash management and trade credit to manage their growth. They have recognized the unpredictability of sales and payments to be the main reason for this. In 2004 they decided to recruit a CFO with vast experience of the IT industry to assist them. At this time they had an urgent need of capital to pay off obligations and finance planned growth. The CFO managed to improve trade credits significantly, and in 2006 to involve a risk capitalist that offered long term debt. To further improve the situation their new CFO have searched for financial planning software to help them predict the future and their capital needs to come. So far the search has not been successful, forcing them to rely on homemade spreadsheets. This need was emphasized by the financial crisis in 2008, when financial institutions suddenly restrained credit/leasing/factoring and every supplier immediately wanted cash on the table. Intensive negotiations started out to gain trust in this difficult time that eventually stabilized their trade credit close to previous levels (13 % versus 10 %). Financing processes got heavily delayed due to slow administration and restrictive lending criteria, slowing down growth. Consequently the risk capitalists were once again forced to invest money to keep Effectnet on track, without them their growth would have stagnated to zero.

> '*At this time we also started an efficiency program. The crisis exposed employee weaknesses and non-functional teams that had to be removed or reorganized, once created as a result of our fast growth'*, the CEO said.

Fortunately, Effectnet had decided to diversify into maintenance and supervision of networks a couple of years ago, written on long term contracts that are stable independent of the economic state. However, the crisis still pushed their solvency and cash liquidity to dangerously low levels, putting doubts on their long term survival. The dedication of their financiers, who from the start had expressed a desire of a quick exit, will most definitely be tested in the future to come.

5.3.5 Discussion

The market IT firms operate is not only fast changing through technology but also increasingly more dynamic due to economic swings. If you at the same time realize a high growth in an industry were capital appears to be of short supply, the situation gets complicated to handle. Some of the effects have been observed.

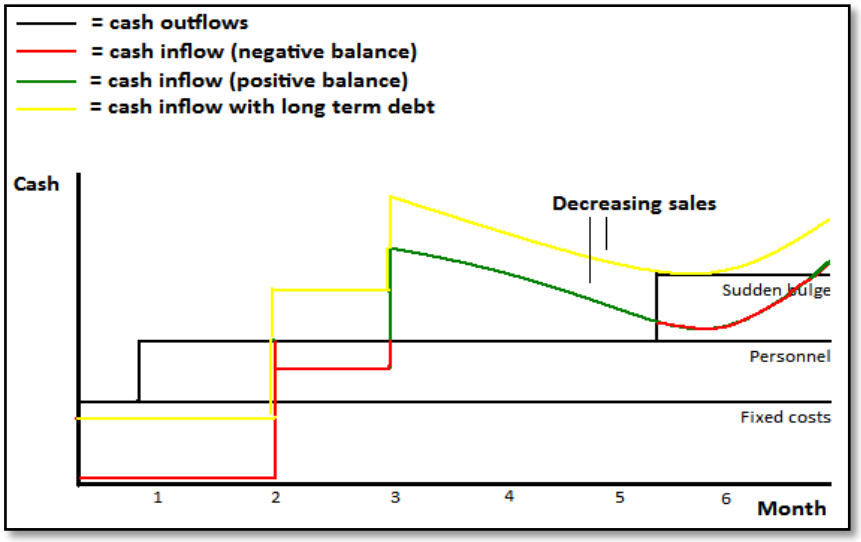
5.3.5.1 Personnel

JAVAtec, who build their early success on creating a sense of belonging among its employees, lost both productivity and efficiency when growing too big. FrontLine, on the other hand, seem to have created an organizational structure and strategy that emphasize the employee importance, inspire skunk work and continuous development resulting in a personnel turnover close to zero and a market leading position. By doing so they achieve a two-sided effect; not only do they minimize recruitment costs (that generally are substantial since temporary employment agencies cannot be utilized and qualified people are scarce) they also manage to direct the market and somewhat control its unpredictability. Seemingly contradictive, you have to be in a position of high profitability to generate enough internal cash to fund the research and development needed. By having a high profitability firms can also keep their employees in downturns, in contrast to Effectnet, and not be forced to take drastic short term measures as laying off some just to hire/train new recruits again when the economy picks up.

5.3.5.2 Cash management

(See Modell II that visualizes the findings, page 27). The IT industry seems to demand high levels of working capital; it is rare to receive payments before 60 – 90 days (in good economic times) while employees receive payments every fortnight (i.e. with 21 days average delay). As Michaelas et al. (1999) reported, SME's without long term debt will have slim chances of handling even small things as late payments increasing their dependence on short term debt. Under these conditions, and with limited financial help, entrepreneurial IT firms strive to gain market share (constantly increasing working capital needs) and overcome the obstacles that annually confront them without really considering what caused them. By only using simple spreadsheet analyses (not even that in some cases) they have no power to detect sudden cash flow bulges (e.g. tax, maintenance, new offices, and product development), future capital needs, decreasing sales or need of new projects to keep employees busy. In Model II we see how long term debt can help, however there are other ways. The only firm who actually claime to be in knowledge of the costs associated with its projects (i.e. if a job really is profitable or not) is FrontLine. In the light of their superior profitability they seem to use their most scarce resource, the employees, with care meaning they turn down less- or non-profitable projects. When searching for other solutions to the problem, Airtec's solution of not customizing a product until it is paid for is found along with saving to a cash buffer. Additionally, a common solution they all keep looking for is software facilitating their cash management and financial planning procedures; so far none have been found. From an external perspective it is obvious that their entrepreneurial minds have prioritized other tasks. Relating back to the theoretical framework, there is evidence (e.g. Ernst, 1984) that the cost of growth has been known for decades and produced several calculative methods to handle it (e.g. Churchill and Mullins, 2001).

Model II. Cash management with and without long term debt.



5.3.5.3 Dynamic economy of today

When the financial crisis unfolded in 2008 the financial status of the IT firms and the effects of high growth were ultimately tested and stressed. Everyone's trade credit got seriously affected (since suppliers wanted money on delivery and customers were unable to pay or paid late), it was harder to finance through leasing and factoring, sales went down, and everyone's (except FrontLine's) solvency and cash liquidity was seriously hurt as a result. In the case of Effectnet and Airtech they were hurt so bad and so fast that it can only be interpreted as clear warning signals for their future survival. Effectnet has utilized all their stakeholder trust and industry experience to negotiate good contracts but it has not been sufficient. Airtech on the other hand has not even tried to use stakeholders finance but naively accepted their contracts as industry standard. Instead Airtech has focused on obtaining long term finance by showing stability (solid financial status, zero lay-offs and profitability) and when that failed and the crisis started affecting them their situation became, rather contradictive, immediately unstable. Additional solutions found include factoring, collection of debt, ordering customer credit reports, and long term debt.

5.3.5.4 Generation of internal funds.

It is conclusive to once again mention the major influence profitability has had on IT firms. By just being profitable they have created cash buffers (i.e. small amounts of long term debt) helping them avoid many of the effects of high growth within the industry just described. Their profitability has also spurred entrepreneurial activity and enabled continuous research and development to take place instead of relying in financial institutions financing large investments every tenth year. However, profitability has not been completely determining. Their fast growth and the demanding industry and economy have inevitably increased their need for external and long term finance. FrontLine and Effectnet have realized this and accepted that it most likely cannot be achieved, at least as of today, without sacrificing firm ownership. Yet two vital differences between the two firms can be identified. FrontLine have managed to find a risk capitalist with a long term interest and essential business knowledge and dedication to facilitate a further expansion, whilst Effectnet in-

volved a risk capitalist purely for financial reasons that insisted on a quick exit strategy. So far FrontLine's strategy seems to be superior.

5.3.5.5 Flexibility

The concept of flexibility has so far been omitted intentionally since its contribution to the study was partially misjudged from the start. Flexibility is not in any form invested in by the IT firms as of today, but instead seen as a major problem. The dynamic economy, the dynamic industry, and the dynamic customers who at anytime can cancel projects makes their world highly unpredictable.To obtain the essential capital in here they must defeat it and display stability. They do not even try to attain a certain degree of flexibility with their personnel; temporary employment agencies cannot offer the knowledge needed, and it is too expensive to lay off personnel since at least 6 months of training always is needed when rehiring. Instead a low personnel turnover is believed to counteract the experienced flexibility by achieving continuous improvements (e.g. skunk work, internal work when external is not needed) possibly resulting in a market leading position, or at least the journey will amortize on the large investments otherwise needed when products reach obsoleteness. Furthermore, in the above section of cash management it is obvious that the firms have identified the need to 1) accurately measure their current position, 2) budget and with flexibility (under consideration) plan for the future, and 3) balance strategic goals with present resources and future financial needs, just as suspected in the theoretical framework. So far none of the companies have found the tool facilitating this routine, but just identifying the need is a big step along the way. Maybe the solution is to use a version of the balanced scorecard, or maybe they will identify or themselves construct an IT software solution? Hopefully, until that is done, not too many firms not experiencing the same profitability as the firms within this sample will face bankruptcy. Not only is it important for Sweden, but for most countries focusing on education, research and development, and knowledge as competitive advantages. SME's have the power to carry us into a prosperous future, if we just facilitate instead of prevent them from growing successfully.

6 Conclusions

Describe the financial situation of IT SME's. From the statistical analysis describing the entire IT SME population (10-249 employees) it was apparent that IT firms do grow with assets carrying low collateral value. However, this has not determined their level of debt, but instead the character of it. IT SME's have on average only financed 3 % of their total assets by using long term debt, indicating that they are heavily dependent on short term debt or equity. When searching for determinants of their capital structure profitability was found to be negatively correlated to debt, resulting in acceptance of POT (Myers, 1984) when interpreted as internal funds are preferred over debt. Furthermore, age was positively correlated to debt indicating that relationship lending is being exercised. Yet no variable was found to determine their capital structure more than asset structure; negatively correlated to short term debt and positively to long term debt. However, compared to SMEs' within the metal industry, asset structure was a less decisive factor, indicating that some IT SME's have invented solutions to the problem.

Investigate how those IT firms that are fast growing have grown and financed their growth. This evolutional process was found to be best presented using a life cycle perspective. As theory predicted the firms are heavily dependent on internal funds in the first years. Subsequently, if they have achieved some sort of stability and involved a financial institution at an early stage (to utilize relationship lending), they can start to use factoring, leasing, small credit lines and more extensive trade credit. Trade credit was also used successfully by some firms to indicate 'trust capital' and a concrete product demand (i.e. by co-financing investments with customers) when reaching for financial assistance. However after a few more years, expanding the traditional life cycle perspective, despite being highly profitable they all reached a stage (e.g. when international expansion or significant product development is needed) where they have experienced capital constraints. Some firms seem to successfully solve this by involving a risk capitalist offering long term debt and business expertise, while others prioritize firm ownership and instead use their very last savings.

Investigate how those IT firms that are fast growing have managed the effects of growth. The dynamic economy, the dynamic industry, the high growth, and the customers who at anytime can cancel a project makes the world of IT firms highly unpredictable. To survive within this environment they have all to different extents been aiming to show stability; through a zero turnover of their personnel (since temporary agencies cannot be used, recruitment/training costs are substantial), through their finances (cash management systems to identify- and long term debt or cash buffers to smooth out sudden bulges or liquidity squeezes), and through profitability (to ensure continuous product development and to decrease dependence of external funding). If they do not reach long term debt than they will most definitely, due to a financial crisis or by just entering a capital intensive life cycle stage, get affected by capital constraints. Considering these findings, the only evidence of surviving this successfully is by involving a risk capitalist with long term intentions.

Finally, IT firms must realize their fragile position and start planning for the future instead of naively running in to it hoping for financial help when problems arrive. Meanwhile, financial institutions are advised to upgrade their lending criteria to better understand new and upcoming industries, as exemplified by IT firms in Sweden, and more accurately evaluate their credit worthiness. Not only is it important for Sweden, but for most countries focusing on education, research and development, and knowledge as competitive advantages. SME's have the power to carry us into a prosperous future, if we just facilitate instead of prevent them from growing successfully.

7 Evaluation and further research

The method itself is found to be successful within this context; not only since it with small means can find strong evidence, but also since it sets focus on the benefits of qualitative research. By reaching the causes and reasons behind the data the analyses can be both deepened and widened leading to more trustworthy and easier understood result. There are reasons to belief that many qualitative studies within finance have been neglected both before and after realization, due to a widespread disbelief in its power to generalise. Hopefully mixed method approaches can lead to qualitative studies gaining trust among financial researchers. However, authors adopting this method should be aware that the investigation becomes extensive and without carefully structured hard to comprehend for the readers. Conslusions from one stage can be rejected at another, and the other way around.

Concurrently as formulating the recommendations for further research the shortcomings of this study are presented. Since the study is presented in a timeline following the process in which it was created, and not much was known from the start, the result does not rely on extensive theoretical support. The theoretical framework is mainly consisting of tools that could enlarge our understanding of the phenomena and catch the big trends. It is recommended that, now when rather strong indications of the phenomena has been presented, it is further studied and analysed in deeper contexts of strategic management, financial management, and entrepreneurship. Empirically it is also recommended to unravel how financial institutions, risk capitalists and governments all over the world reason about lending to SME's in general and IT firms and other new and upcoming industries in particular.

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Appendix I: Problematic characteristics

Dot-com era. 1995, when Netscape made its entrance to the public stock market, is said to be the starting point for what afterwards has been described as the dot-com era or the dot-com boom (DeLong and Magin, 2006). At this point in time almost every online based and IT focusing company[10] could get external equity from the public without any promising track record or previous profitability (Ljunqvist, 2003). The companies quickly increased their market value, some to astronomical heights, based solely on the expectations of future cash flow and growth, and without any risk in consideration. Five years later, when the bubble burst, millions of shareholders and financial institutes around the world were left with nothing. Since then IT companies have struggled against their bad reputation to obtain capital, and in Sweden the public opinion is still hesitant towards investing in IT (Avanza Bank, 2009). Concurrently, small and medium sized IT focused firms contribution to the economy have lately been realized as highly important by numerous researches (Oakey, 1993; Jones-Evans and Westhead, 1996).

Assets with low collateral value. Another problematic feature that does not connect to SME's *per se* but rather to the asset structure of the individual firm, is collateral security. Research has found variations in debt to match variations in collateral value of firm assets (Asgharian, 1997). Immaterial assets[11], human capital, knowledge, prototypes and ideas are all assets with unknown, unsecure and hard to predict second-hand or future values. Low second-hand values will affect a firm's liquidation value and so impede its chances of obtaining finance (Myers, 1984). A firm with a majority of asset value referable to future growth or market opportunities will likewise find it hard to enforce such a development and use it as collateral today (Myers, 2001). Furthermore, with rationale similar to the 'liquidity paradox' where liquid assets can be shifted against riskier illiquid assets seemingly over night (Myers and Rajan, 1998), an entrepreneur or his key personnel can just as quickly abandon the firm to the despair of the creditors (Oliver and Moore, 1994).
creditors (Oliver and Moore, 1994).

[10] In this paper computer consultants and computer programmers are considered to have an IT focus.

[11] Immaterial assets are defines as '*identifiable non-monetary assets without physical substance used for production or supply of products or services*' (Swedish Accounting Council).

Appendix II: Variables

Determinants. Size (employees and total assets). Age (2008 less the year of incorporation). Profitability 1 (earnings after financial income / total assets). Profitability 2 (earnings after financial costs / total assets). Two measures of profitability are being used, one before financial costs and another one after, to allow investigation of the effect of different debt conditions. Asset structure (fixed assets / total assets) is a measure indicating a firm's collateral value. Growth ((percentage increase in sales + percentage increase in assets) / 2) is an averaged measure since growth is imperative for this study and empirical tests have shown very low correlations between different growth indicators (Davidsson et.al., 2005).

Debt financing. Long term debt (long term debt / total assets) is defined as the total debt due for repayment beyond one year, and it includes long term bank loans, leasing obligations, and director loans . Short term debt (short term debt / total assets) is defined as the total debt due for repayment within one year, and it includes bank overdraft, current bank loans, and current liabilities. Two measures of debt are included since firms have different policies regarding them both, and previous research has found interaction between them. Separating them also allows controlling if factors that influence one of them also influence the other (Michaelas et al. 1999). Accounts receivable (accounts receivable / sales). Accounts payable (accounts payable / cost of goods sold). Cost of debt (financial expenses / (total debt – accounts payable)) is a measure of a firm's average interest expense on interest bearing liabilities displayed as a percentage.

Financial indicators. Solvency ((0,7 * untaxed reserves + equity) / total assets) displays a snapshot of the firms' long term ability to survive (i.e. handle losses). Liquidity ((current assets – inventory) / current liabilities) displays a snapshot of the firms' short term ability to pay creditors. Productivity (turnover / employees). Efficiency (pre-tax profits after financial income / employees). Productivity and efficiency are measures displayed per employee since it is the resource most correlated to their growth. Since this statement does not hold with the same significance for the metal industry, these measures are only used for within the industry analysis.