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Established Firms Versus Venture Capital

The Handling of Financial Contracts

A Case Study

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## **Abstract**

### **Background**

An extensive amount of theoretical research has been undertaken within the field of financial contracting however empirical studies are less common. One of the most prominent empirical studies was performed by Kaplan and Strömberg (2003). Their work tested existing contracting theory against the actual contracts written in 213 venture capital financings.

### **Purpose**

The purpose of this report is to compare an established firm's contract with that of a venture capital firm who have both faced the same investment opportunity. Our research question is as follows:

*Will the financial contracts written by established firms and venture capitalists differ when facing the same investment opportunity?*

### **Method**

This thesis involves a 'unique' and 'revelatory' case study (Yin, 2003). We analyse the contracts with the theoretical framework offered by Kaplan and Strömberg (2003) in order to identify the allocation of cash flow rights, board rights, voting rights, liquidation rights and other control rights. We later compare the contracts with each other based on how each contract has chosen to allocate those rights.

### **Conclusion**

The established firm and the venture capitalists contracts both correlate well with Kaplan and Strömberg's (2003) empirical study. The contracts also show many similarities to each other although some differences exist in how the established firms and venture capitalists choose to allocate cash flow rights.

## **Preface**

We have learned much about financial contracting and on how to write a thesis during the weeks spent working on this research.

We would like to thank the inventor and the venture capitalists that who provided the necessary information required to perform this study. Without permission to study their contracts it would not have been possible to complete this thesis.

Secondly we would like to acknowledge the help we have received from our tutor, Stefan Sjögren, in finding research material and with delimiting the scope of our thesis.

Finally we would like to thank everyone who has offered help and advice during these long weeks.

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# 1 Introduction

## 1.1 Background

Financial contracting can be seen as deals made between an investor and those who need financing. Let's say an entrepreneur has an idea but no money and an investor has money but no ideas. If these parties are both to gain from doing business together, how will these gains be realized? How will the new venture be financed? How do we determine that both parties work for the benefit of the venture as a whole and not just their own needs?

Franco Modigliani's and Milton Miller's Nobel Prize-winning paper from 1958, "The cost of capital, corporation finance and the theory of investment" gave birth to modern financial theory. Modigliani and Miller argued that in a world without taxes, transaction costs, bankruptcy costs, incentive problems or information problems, how a firm is financed is irrelevant to firm value. This theory, while an important benchmark, doesn't reflect reality very well.

In the real world there are taxes, transaction costs, bankruptcy costs, and agency problems. Therefore researchers have tried to find out what is missing from the assumptions of Modigliani and Miller. Researchers have focused on two major problems that affect the firm's value: taxes and the agency problem.

The recent financial crisis has raised the debate over the agency problem to new heights. If there is a division between those taking financial risk and those that bear the cost, if the decision goes badly, than we have an agency problem. Agency problems may also be caused by differences in the information available to managers and investors. Managers often have better access to information within a firm and can take advantage of that to make decisions which benefit their interests instead of those of the firm as a whole.

Financial contracting theory has identified five different rights that have to be taken into consideration while creating a financial contract; cash flow rights, liquidation rights, board rights, voting rights and other control rights. In 2003 Steven Kaplan and Per Strömberg published their paper "Financial Contracting theory meets the real world: An empirical analysis of venture capital contracts" where they discuss the allocation of these five rights within the contracts of 213 venture capital investments in 119 different venture capital funded firms.

Venture capital firms fit well into financial contracting theory since the major investors often have a close relationship and are few in numbers. This limits the complexity of the study and fits well into the Aghion-Bolton model where investors are seen as one individual and entrepreneurs as one individual. But what happens in a more complicated reality? Do large established firms act differently than venture capitalists in their approach to solving agency problems in their financial contracting?

To study this we must find a situation where both venture capitalists and established firms have had interest in the same idea. Our dissertation focuses on one such case: the invention of an entirely new method of solving an existing problem in a large industry. This invention was acquired by an established firm. The invention was later returned to the inventor after a merger with an even larger firm, and then acquired by a group of venture capitalists who built their newly established firm around it.

## 1.2 Aim of the thesis

The aim of this case study is to examine if the established financial theories, already tested by Kaplan and Strömberg(2003) among venture capital firms, are applicable to both an established firm's financial contracts and the venture capitalists' financial contracts when acquiring the same invention. If the financial theory applies in both cases do venture capitalists and established firms allocate different control and cash flow rights in different ways? Will the fact that an established firm already has a presence on the market affect how it handles rights in financial contracts? Will the size of the firm affect their contracts? The established firm might offer a larger sum up front to the inventor to keep the future cash flow rights of the inventor small. The venture capital firm might want to keep the initial sum small to limit risk while keeping future cash flow rights of the inventor high as an incentive. Our main research question is as follows:

*Will the financial contracts written by established firms and venture capitalists differ when faced with the same investment opportunity?*

## 1.3 Demarcation/Delimitation of the study

Because of the subjective nature of interviews and the inability to interview all concerned parties we have chosen to limit our study to the use of the actual contracts. Interviews and correspondence which we have been granted access to by the inventor and the venture capital firm will only be used for producing a description of the background of the invention.

Our analysis will compare the actual contracts drawn up between the inventor and the two different firms. We have not included amendments to contracts whose purpose has no apparent value to our analysis. These contracts include the transfer of agreements from one party to another and the contracts involving the actual ownership transfer of the different patents that make up the invention.

Since we are limiting our analysis to actual financial contracts we will not take into consideration other parties who have shown interest in the invention over the years. Our main actors in the analysis will be the inventor, the established firm and the venture capital firm.

## 2 Theoretical background

### 2.1 An introduction to financial contracting

Modern financial theory started with Franco Modigliani and Milton Miller's paper from 1958: "The cost of capital, corporation finance and the theory of investment". In this paper they stated that in a world without taxes, transaction costs, bankruptcy costs or agency problems, how one chooses to finance a firm has no effect on the firm's value. It does not matter if a firm chooses to raise capital through issuing stock or selling debt. The dividend policy of the firm has no effect on firm-value either.

A very simple example of this has been provided by Hart (2001). The value of a project or firm can be seen as the value of future cash flows or revenues. All future cash flows have a present value which you can calculate by applying a discount factor. If you add all the discounted cash flows together you get the present value of the project or firm:  $V$  (Hart, 2001: p. 1080).

Suppose the project initially costs the amount  $C$ . The project is then only viable to undertake if  $V > C$ . The financiers who supply the  $C$  must receive their  $C$  back in some way. This can be done by offering them shares of future cash flows so that  $sV = C$ . They could also receive risky or riskless debt with a present value of  $C$ . No matter how they realize the project they must receive  $C$  back and that leaves  $V - C$  to the entrepreneur. So as shown above, how  $C$  is received does not matter to the entrepreneur (Hart, 2001 p. 1080).

Modigliani and Miller's financial theory fails to reflect reality very well since reality isn't as simplified as the world Modigliani and Miller depict in this paper. In the real world there are taxes, transaction costs, bankruptcy costs and agency problems. Despite its failings, Modigliani and Miller's work still forms an important framework for further studies. Since it was published researchers have tried to add what is missing from their theory. Two aspects have been focused on primarily more than the others: agency problems and taxes (Hart, 2001, p. 1080).

#### 2.1.1 Taxes

In many countries, tax authorities favor debt in relation to equity. Interest payments are shielded from taxes since they are subtracted as costs before income is calculated while dividends to shareholders are not. The result of this is that it becomes more favorable for firms to pay out their profits as interest instead of dividends. This way they reduce the amount of taxes paid and increase the amount paid out to creditors and shareholders as a whole. This is at the expense of society since less tax revenue is collected by the treasury (Hart, 2001, p. 1081).

If the tax shield was the only addition needed to Modigliani and Miller's theory firms would have much higher debt-equity ratios than they actually do. The tax shield only provides part of the answer to why Modigliani and Miller's theory is incomplete. As shown by Rajan and Zingales (1995) debt-equity ratios have a large effect on capital structure but other aspects are important as well.



### 2.1.2 Incentive problems

Recent literature has focused mainly on agency problems. These can be divided into two categories, incentive problems and information problems. The most famous paper on incentive problems was published by Michael Jensen and William Meckling (1976). Jensen and Meckling argue that a firm's value is not fixed but depends on the actions of management. For instance, managers may consume non-pecuniary benefits (perks) such as company cars, luxurious offices and expense accounts. These perks are attractive to managers but have no value for shareholders since these perks reduce firm value. One dollar invested in perks reduces firm value by more than one dollar.

Jensen and Meckling apply these ideas to explain debt-equity ratios in a firm's financial structure. For example; a manager who owns 100 percent of a firm will not consider consuming perks since he will himself bear the cost of them. If this manager later needs to raise capital and does so by issuing stock his ownership percentage will be diluted. He will then start consuming perks since the cost of perks will partially be borne by others than him.

If the same manager chooses to raise capital through riskless debt he will still bear the cost of all perks since the debt is riskless and must be repaid. He will then choose not to consume perks. In this regard debt seems like a good way to raise capital. However, Jensen and Meckling argue that debt becomes more costly as the amount of debt grows. The debt then becomes risky since there is a chance that the manager won't be able to pay it back. This will lead to encouraging the manager to take more extensive risks in the firm since if the risks pay off the manager will gain the benefits, while if the risks don't pay off and the firm goes bankrupt the creditors will bear most of the costs.

Jensen and Meckling conclude that the optimal capital structure of a firm is where the marginal benefit of keeping a manager from consuming perks is offset by the marginal cost of causing risky behavior. One problem that Jensen and Meckling run into is, why solve an incentive problem with the limited ways available to you through a firm's financial structure? If you have an incentive problem why not solve it with incentives?

### 2.1.3 Information problems

Another problem that arises within corporate financing is if managers have more information than shareholders. Steward Myers and Nicholas Majluf published their findings on this subject in 1984. Just like Jensen and Meckling, Myers and Majluf considered a manager who needed to raise capital in a firm. Instead of perks, Myers and Majluf demonstrated that managers have better information about the profitability of a firm and the value of its assets.

In this case a manager owns shares in the firm and he knows that the firm is worth more than investors believe. He will then act in the interest of current shareholders and not want to raise capital by issuing new shares since he will only be able to sell these below actual value. This will dilute the worth of his and other investors' current shares. Instead he will raise capital through riskless debt since the firm will only pay the market interest rate and no dilution will take place (Myers and Majluf, 1984).

The limit of Myers and Majluf's theory is that managers aren't always shareholders and will in that case not always act in the interest of current shareholders. Acting in the interest of current shareholders is not always the best approach either. As shown in Myers and Majluf's example above profitable projects may be rejected because current shareholders are afraid of dilution (Myers and Majluf, 1984).

Information problems may also include the inability to correctly judge the value of contributions based on effort. Holmström (1979) discussed how even imperfect information received by monitoring effort can be used to improve performance resulting in an increased firm value. This is achieved by using incentives in contracts to make managers and employees benefits more in line with the cash flow benefits of the firm's shareholders. Holmström (1979) uses the example of a technician repairing a machine, which performs value enhancing duties in a firm. If the technician performs his job well the machine will last longer than if the technician performs poorly, therefore increasing firm value when the fixed assets can be used longer without being replaced.

## 2.2 Control rights

However, incentive and information problems don't give the whole picture. What happens if circumstances change drastically in the future? For instance, how many people could have foreseen the fall of the Soviet Union ten years before it happened? Contracts cannot be written with every eventuality taken into consideration simply because the future cannot be predicted. Contracts unable to cover all future eventualities are called "incomplete". The solution to incomplete contracts is to define how future decisions are made (Hart, 2001, pp. 1083-1084).

Financial contracting literature takes the view that even though the contracting parties cannot foresee every eventuality that may arise, they can agree on a decision making process to face possible problems. One way of doing this is through the financial structure of the firm. Equity normally doesn't only come with cash-flow rights but also votes. Equity holders collectively choose a board of directors which in turn has the right to make important decisions (Hart, 2001, pp. 1083-1084).

Creditors on the other hand don't hold the right to choose a board of directors or take decisions in the firm directly. However they have other rights. If the creditor isn't paid the creditor has the right to seize or foreclose the firm's assets or push the firm into bankruptcy. If the firm is pushed into bankruptcy, creditors often retain similar rights to shareholders. A rough rule of thumb is that shareholders have decision rights while the firm is solvent and creditors gain decision rights when the firm enters a default state (Hart, 2001, pp. 1083-1084).

In earlier financial structure theory, such as Modigliani and Miller's, only cash-flow rights are considered. In financial contracting theory on the other hand decision rights and votes are key, although cash-flow rights are important. It is also important to mention that all decision rights are not transferable. The decision to consume perks as stated by Jensen and Meckling can only be taken by managers while decisions to replace a CEO may be transferred to shareholders or creditors (Hart, 2001, pp. 1083-1084).

### 2.2.1 Allocation of control rights

How should these control rights be allocated between entrepreneurs and investors? Who should have the right to decide when to replace a CEO or when to terminate a project? Aghion and Bolton (1992) assumed that projects not only yield cash flows but also private benefits. Private benefits may involve perks as described by Jensen and Mecklings but Aghion and Bolton state that these benefits may also be psychological in nature yet still be measured in monetary value. The investor will only be interested in cash flows while the entrepreneur is interested in cash flows and private benefits. These different interests may create conflict between investors and entrepreneurs.

Examples of private benefits may be the satisfaction of working on your own project and seeing it succeed. This may increase the entrepreneur's reputation and be of value for him in future ventures. Other private benefits may be more harmful for the firm. The controller of a firm may hire individuals close to him who may be less qualified. The controller may even negotiate terms of trade with other firms in which he has ownership in at above market prices to siphon funds out of the project.

How then are these conflicts resolved? Aghion and Bolton (1992) consider a firm's cash flows have the value  $V$ . The entrepreneur's cash flow rights amount to  $xV$  and his private benefits are  $B$ . The investor's cash flow rights amount to  $(1-x)V$ . If the project is set up at date 0 and all benefits are earned at date 1 the objective functions at date 1 for are:

$$\text{Entrepreneur: } \text{MAX } B + xV$$

$$\text{Investor: } \text{MAX } (1 - x)V = \text{Max } V$$

It is also valid to consider the social (Pareto) efficiency where the goal is to maximize the benefits of both the entrepreneur and the investor.

$$\text{Social aspect: } \text{MAX } B + V$$

Clearly all these three objective functions are distinct from each other which suggest that it does matter if control lies with the entrepreneur or the investor.

We will once again use an example from Hart (2001). Consider a firm which faces a choice to either continue or terminate a project. The entrepreneur's private benefits amount to 100 and 200 worth of resources that can be saved if the project is terminated. The entrepreneur owns ten percent of the equity and the investor the rest. If the project isn't terminated the investor stands to lose 180. If the project is terminated the entrepreneur stands to lose benefits worth 80. In this case an investor with control would terminate the project but an entrepreneur with control wouldn't. From a social perspective the project should also be terminated since the monetary loss isn't offset by the private benefits. If the cost of not terminating the project was 80 instead of 200 the project's social benefits would be positive but the investor would still choose to terminate it since his only concern is cash flows.

With the points above we will have two instruments at our disposal at date 0 when a contract is drawn; the allocation of cash flow rights and the allocation of control rights. There are 2 extremes to this equation. The first is where the entrepreneur receives all cash flow rights and control rights. This will maximize both the entrepreneur's benefits as well as social benefits. The downside is that the investor gets none of his money back. The other extreme is if the investor receives all rights. In this case the investor will focus everything on cash flows with no consideration for the private benefits which are never realized.

Where between these two extremes is the optimal contract located? The simplest answer is if the project yields a cash flow which at least covers the cost of the investor's investment, discounted back to date 0, regardless of what decision is made at date 1, then the investor can be given riskless debt with the value of his investment. This enables the entrepreneur to keep all equity and decision rights and there is no loss of social efficiency since he will maximize  $B + V$ .

Because of uncertainty, it is unlikely that a project will generate that amount of cash flow regardless of which decision is made at date 1. To understand what is optimal in this situation parties will try to anticipate and contract on certain types of future events. If the firm does well one type of alternative will apply and if it does poorly another will.

The advantages of who has control of the firm may differ depending on factors concerning the firm. In one situation private benefits may be less important and a strict cash flow maximization strategy is more efficient to maximize social value. In these cases the investor should have control of the firm.

The opposite may also be true. Private benefits may be very valuable in some situations while cash flows are of less value. In these cases it is more efficient for the entrepreneur to have control as long as the investor reaches his break-even point (Hart, 2001, pp. 1086-1088).

## 2.3 Kaplan and Strömberg's empirical analysis

The theories mentioned above are only a selection among the theoretical work within the field of financial contracting. Though very few empirical studies have been made on this area one of the most prominent is the study "Financial Contracting Theory Meets the Real World: An empirical Analysis of Venture Capital Contracts" by Kaplan and Strömberg (2003). Due to the lack of empirical testing of financial theory, Kaplan and Strömberg applied existing financial contracting theory to 213 venture capital firms. The focus of their research was how the real-world financial contracts meet the criteria's in financial contracting theory when it comes to measuring and allocating different contract rights such as: cash flow rights, board rights, voting rights, liquidation rights and other control rights (Kaplan and Strömberg 2003).

Kaplan and Strömberg's observations conclude on how VC financed ventures contribute to allowing VCs to allocate cash flow rights, board rights, voting rights, liquidations rights and other control rights. Their report suggests that the rights often are linked to financial and non financial performance. For example, in the event that the firm performs poorly, then the VC often obtains full control regarding board rights, voting rights and liquidation rights. The entrepreneur on the other hand increases his or her control when the performance increases leading to more control rights. When the firm performs well, the VCs obtain their cash flow rights but abstain from their control and liquidation rights.

Another fact reported in their study is the recurring inclusion of incomplete contract and vesting provisions in the contracts in order to make it more difficult and costly for the entrepreneur to leave the venture, leading to the hold-up problem between parties involved.

According to the reported cash flow incentives, control rights and contingencies are used in these contracts as complements rather than as substitutes. In cases where VCs acquired voting and board majority rights the entrepreneur's equity claim and the release of committed funds is related to performance (Kaplan and Strömberg 2003).

Kaplan and Strömberg's paper is essential to this thesis. Where Kaplan and Strömberg only studied venture capital firms we will go one step further and compare the venture capital firm with an established firm using the same financial theories.

Kaplan and Strömberg's (2003) conclusions are as follows:

- Venture capitalists are able to allocate the different rights using combinations of multiple classes of common stock and straight preferred stock. Therefore solving principal agent problems such as those discussed by Holmström(1979) and Jensen and Meckling (1976).
- Control rights between the Venture capitalist and the entrepreneur are central in the constructing of the financial contracts. Therefore enforcing the general purpose of contingent contracting, contracts are incomplete according to Grossman and Hart (1986) and Haart and Moore (1990).
- Cash flow right and control rights can be separated and made contingent on verifiable measures of performance. Supporting the theories regarding shifting of control to investors in different scenarios (Aghion and Bolton 1992)
- The care about using non-compete and vesting provisions enhances the hold-up problem discussed by Hart and More (1994).

## **2.4 Defining different rights**

In order to answer our research question we must be able to accurately compare the different rights included in the contracts. To do this we first must define each right. This will be done by using the definitions included in Kaplan and Strömberg's (2003) research.

### **2.4.1 Cash flow rights**

Cash flow rights refer to the portion of a firm's equity value that managers and investors have claim to. These have monetary values and include dividends. The most common way to allocate cash flow rights is through stocks.

### **2.4.2 Board rights and voting right**

Board rights, voting rights and cash flow rights are often one and the same. Normal preferred stock includes all three of these. There are also instances where board rights and voting rights differ from cash flow rights and where all three differ from each other.

Board rights are seen as the seats on the board of directors who are elected by the owners of a firm. These can differ from voting rights through explicit agreements on the election of a board member.

Voting rights refer to the number of votes investors and managers have to affect corporate decisions. These are often seats on the board of directors.

As stated above, Kaplan and Strömberg (2003) found that different control and cash flow rights can be allocated by contracting parties.

### **2.4.3 Liquidation rights**

Liquidation rights are a type of cash flow right. The difference is that normal cash flow rights dictate how cash flows are allocated when the firm is doing well enough to pay senior claims (often debt) and still have sufficient funds left to allocate resources back to investors. Liquidation rights describe how cash flow rights are distributed when the firm does poorly and is faced with liquidation. Senior claims always receive priority in these cases. Kaplan and Strömberg (2003) find that in almost all their studied cases, venture capitalists are granted superior claims to liquidation rights over the entrepreneur.

Kaplan and Strömberg (2003) conclude that liquidation rights that equal or surpass the initial investment are found in 98% of their contracts.

### **2.4.4 Redemption rights**

Redemption and put provisions are often used to strengthen a VC's liquidation right. A redemption right gives the VC the right to demand his investment back after a certain amount of time. This is similar to a debt claim with the exception that the company can't force the holder of a redemption right to exercise the right. Liquidation rights are often meaningless without a redemption right since at the liquidation there are often no further payments for the firm to default on.

Kaplan and Strömberg's (2003) study shows that 78% of their venture capital contracts include redemption rights with a maturity of an average of five years.

## **2.4.5 Other terms common in contracts**

Kaplan and Strömberg (2003) also mention other terms common in financial contracts that need to be considered. We have chosen to list those that are applicable to our case.

### **2.4.5.1 Anti-dilution protection**

VCs often have anti-dilution protection to protect the VCs claims from being diluted by more than their current value in future financing rounds. Kaplan and Strömberg (2003) conclude that anti-dilution protection clauses are included in 95% of their studies contracts.

### **2.4.5.2 Vesting and non-compete clauses**

As Hart and Moore (1994) state, contracts cannot be made to force an entrepreneur to stay with a firm. They can however make it harder for the entrepreneur to leave the firm. Common ways to do this is to have the entrepreneur's shares vest over time so if the entrepreneur leaves the company can buy back his unvested shares for a discount price. Another common way is for the entrepreneur to sign a non-compete contract prohibiting him from working for another firm in the same industry for a set amount of time.

Vesting is evident in 41% of Kaplan and Strömberg's (2003) cases which non-compete clauses are included in 70% of their contracts.

### **2.4.5.3 Other contingencies**

Many researches argue about what is possible to contract on. For example, Hart and Moore (1998) assume that entrepreneurs and investors can observe the firms output but they cannot contract on this since the output cannot be verified in court in the event of a disagreement.

Contingencies are used to try to foresee possible future outcomes and contract on what is to be done if they occur. Contingencies may be triggered by financial performance, actions, dividend payments, security offerings, future employment and many other factors. These contingencies may affect the different rights stated above.

Grossman and Hart (1986) argue that in some cases contracting too many contingencies may be very costly and in these cases it is better for one party to receive all control rights over a property except for those explicitly mentioned in the contract.

Kaplan and Strömberg (2003) find that 73% of all contracts involve some type of contingency clause.



### 3 Method

*Our research question in this thesis being:*

*“Will the financial contracts written by established firms and venture capitalists differ when faced with the same investment opportunity”?*

It can be broken down into two different prepositions:

1. *“Do the results in Kaplan and Strömberg’s empirical analysis apply to our contracts, and if yes, how do they apply”?*
2. *“What are the reasons for any differences and what are their consequence regarding the contract structure in an Established firm and in a Venture Capital firm respectively”?*

In order to perform this thesis inside information regarding the contracts was essential. The topic of the thesis was therefore relying on the ability to access the contracts between the established firms, venture capitalist and the inventor himself. The access to the contracts was ensured through one of the authors of this thesis, which is employed by the Venture capital firm.

#### 3.1 Characteristics of the study

In an attempt to deliver a rational answer to the above mentioned research questions, this study will apply the different rights defined in Kaplan and Strömberg (2003) to two financial contracts written about the same investment opportunity by two different firms and then compare how the two different firms differ in their approach to these rights.

The fact that the inventor is the same person in both contracts will probably result in them being very similar in nature. This will help the relevance of our study since this implies that differences between the contracts will be the result of differences between the firms and not in the preference of the inventor.

When discussing “the invention” we refer to all patents and the knowledge/know-how linked to this group of patents.

A systematic survey of previous research on the subject was performed to gather up to date information which is relevant for our study. The contracts and correspondence available to us were analyzed to draw the historical background of the invention. The different contracts were then studied to identify and match sections to their corresponding control rights.

All monetary values are indexed using the Swedish consumer price index with 1997 as index 100 to be able to accurately compare sums between contracts drafted years apart (SCB, 2010).

According to Yin (2003) there are different types of case studies. It is important to make a distinction between those: Critical case, Unique case and Revelatory case.

We found that the best suitable type of case for this thesis is the revelatory case which refers to “when an investigator has an opportunity to observe and analyze a phenomenon previously inaccessible to scientific investigation” (Yin, 1984, p. 44).

However, the character of this study will not only be of revelatory kind given that the case in question is also unique (Bryman and Bell, 2007). The goal of a descriptive study is to study an object, process or relation in the past or present. An explanatory study tries to explain something that is in one way or another currently unknown (Patel and Davidson, 2003). Our study is descriptive in nature since it aims to adopt existing theory to describe events.

### **3.2 Method of analysis**

The two contracts were compared according to rights in order to identify if there are any differences in how the rights are handled by the established firm and the venture capitalists.

In order to facilitate for the reader all percentages regarding the comparison of the contracts will be based on Established firm/Venture capital relationship.

In order to facilitate and enhance the differences and similarities between the contracts for the reader, the analysis of the contracts and the rights involved are treated separately. Every right is analyzed apart and quotes from the original contracts are incorporated. This procedure aims to give the thesis analysis more credibility and help the reader to understand why and how we analyzed and associated the rights to the contracts. Due to the special nature of this thesis the quote system was preferred instead of including the contracts in an appendix. This decision was taken in order to protect the parties involved and the contracts which still are still active today, as well as anonymizing the parties involved.

### **3.3 Collection of data**

Our data will be strictly qualitative and we will only focus on existing financial contracts. Because of the inability to contact all parties involved in drawing these contracts, mainly those involved in the established firm, and the fact that interviews can be subjective in nature, we have chosen to only focus on the actual contracts and not on interviews. Historical correspondence, supplied by the inventor and the founders of the venture capital firm, between different parties involved will only be used to produce the historical background of the invention.

The collection of data was assembled from primary sources in Firm B and materials provided by key staff involved in the company, in particular financial contracts and correspondence between parties involved in the venture, which are vital to this thesis. Secondary sources such as academic journals and articles have been used in order to create a robust theoretical framework to answer our research questions.

All literature used in this thesis has been of academic nature, focusing in different theories of financial contracting rights. Our aim has been to cover all applicable theories regarding contract rights and to use recent publications in order to provide the reader with updated information in the field. Recommendations in literature from our tutor have been of high interest and preferred due to their importance in the field of study.

## **3.4 Credibility**

In order to be scientific, studies need to meet two criteria, validity and reliability, regardless of the empirical data they are based on. These criteria are necessary for the study to have credibility (Jacobsen, 2002).

### **3.4.1 Validity**

There are two different aspects of validity (Jacobsen, 2002). Internal validity represents how well the study actually measures what it intends to measure. External validity is how well the study can be applied to contexts outside the parameters of the original study. The internal validity of this study is high since we are using purely first hand information in the form of the actual contracts. Because this study only involves one case, its external validity is restricted and no generalization can be made from the findings.

### **3.4.2 Reliability**

The reliability of a study is the extent to which the results would be the same if the study was redone at a different time by different researchers or respondents. Because the focus of this study relies entirely on the actual contracts, a later study would make use of the same information that we have. The subjective nature of interviews is one of the reasons that we have chosen not to use these in our study.

In order to make sure that the opinions of one researcher do not reflect on the results of the study, every part of the analysis has been discussed by both authors before being committed to this thesis.

The contracts analyzed in this study are originally written in Swedish. All analysis by the authors has been done using the Swedish originals in an attempt to minimize the effect mistranslation may have on our study.

## 4 Analysis

In order to analyze the different rights involved we will first identify parts of each contract which correspond with each separate right. Then we will analyze the differences between the contracts. To simplify for the reader the following will be used to describe the different parties:

Contract **A**: Established firm's contract

Contract **B**: Venture capitalists' contract

The invention: all patents and know-how involved with the invention discussed in this paper.

The inventor: the inventor and owner of the invention.

Firm **A**: The established firm

Firm **B**: The venture capitalist firm

### 4.1 History of the invention

The invention we follow in our case has the potential to become disruptive in nature. Disruptive innovations are hard if not impossible to predict. Only time can tell. The concept of disruptive innovations was introduced by Clayton M. Christensen. In his book "The Innovator's Dilemma" he describes the term in the following way:

"Generally, disruptive innovations were technologically straightforward, consisting of off-the-shelf components put together in a product architecture that was often simpler than prior approaches. They offered less of what customers in established markets wanted and so could rarely be initially employed there. They offered a different package of attributes valued only in emerging markets remote from, and unimportant to, the mainstream." (Christensen, 1997 p.13)

The invention has so far done exactly what Christensen describes. It has started by creating an entirely new market within its industry. The invention is also applicable to be introduced on established markets since it solves some of the most basic problems the industry is faced with even though it cannot compete with the industry in terms of price yet.

The invention was first patented in 1992 by the inventor. It has later been improved with further patents. During its life time most large established firms have shown some kind of interest in the invention although the only established firm who has actually contracted about it was fairly small in this industry (Correspondence).

In 1997 the contract between Firm A and the inventor was finalized and signed. This contract was a type of exclusive licensing agreement. Before the invention would be developed into a completed product, firm A was purchased by one of the largest firms in the industry. This firm decided not to continue the development of the invention and in 2001 the contracts were terminated (Correspondence).

In 2003 Firm B decided to purchase the invention. Firm B consisted of a group of venture capitalists. A contract was signed and all patent rights were transferred. The contract was later amended in 2007 when the financial compensation to the inventor was revised (Contract B).

Firm B has to date developed three different products involving the invention and available to the market today. These products have created two new emerging markets within the industry.

## 4.2 General analysis of the contracts

The contracts are constructed in a similar way which may be the result of the inventor being the same entity in both cases.

“Firm A, which have production and sales activities suiting the invention, wish to acquire the exclusive right to exploit the invention in the world according to the conditions in this license agreement.” (Contract A, preface)

“Firm B has the intention of acquiring all rights to the invention” (Contract B, preface)

As shown above, the first major difference between the contracts is that contract A is an exclusivity agreement involving the entire world where contract B buys the invention from the inventor. In contract A the inventor signs away his right to use his invention and in return he receives different rights. In B the inventor sells his invention in exchange for different rights. This strengthens the claims of Grossman and Hart (1986) regarding the cost efficiency of allocating all rights to one party except for those explicitly mentioned in the contract. In both contracts the inventor excludes himself from all rights except for those stated in the contract. Kaplan and Strömberg (2003) also found that Grossman and Hart’s theories were consistent to how venture capitalists handled their financial contracts.

## 4.3 Cash flow rights

“Royalties of 3.5% of Firm A’s net invoice amount on sales of the licensed product.” (Contract A, §9b)

“Royalties shall be paid to the inventor for products sold involving the invention whether patent protection is available for the country/countries or not, but not after patent protection ends.” (Contract A, §9b)

“Royalties of six (6) percent of Firm B’s net invoice amount while selling the invention in patent protected countries and three (3) percent in other countries shall be paid to the inventor.” (Contract B, §10b)

In both contracts the parties have agreed upon a royalty based compensation model instead of an equity sharing model. Royalties can be seen as stock without control rights. A lump sum often replaces the value of assets included in the stock value and royalty payments substitute dividends.

As discussed earlier, interest is considered a cost in most countries granting it a shield against taxes. Royalties are also considered a cost. This grants them a tax shield very similar to that of debt and may be one reason to why both parties have chosen this method.

Cash flow right	Contract A	Contract B	Amendment to B
Consignment Date	1997-02-03	2003-09-09	2007-05-23
Termination Date	2001-01-01	-	-
Index	100	108.08	112.91
Lump Sum	1 000 000	555 124	-
Royalties (Patent country)	3.5%	6%	Fixed sum of 531
Royalties (Non-patent)	3.5%	3%	Fixed sum of 531
Min Royalties (yearly)	100 000	277 562	265 680
Max Royalty (per unit)	75 USD	-	-
Patent fees	120 000	120 000	-
Minimum value of inventor benefits per year	120 000	397 562	

*Table 4.1, Cash flow right comparison between contract A and B*

*Source: Contract A and B. All sums are in SEK unless otherwise stated. Sums are also indexed with the year 1997 as index 100. Source for Index: SCB*

The inventor's cash flow rights are defined in the same way in both contracts though the sums differ greatly. As seen in the table above, the inventor received almost 200% more in contract A in comparison to contract B as a lump sum after signing the contract. The inventor will also receive royalties in both cases, though in contract B royalties will vary depending on if the country in which the licensed product is sold is patent protected or not. In a country with an active patent the inventor will receive a royalty of 6% from contract B and 3.5% from contract A. In a non-patent protected country the royalties will amount to 3% from contract B but still 3.5% from contract A. contract A also includes a maximum royalty per unit clause.

Worth noting is that in both cases a minimum royalty must be paid each year. In contract A the minimum royalty is 36% of what is contracted in contract B. Calculation of minimum royalties start in contract A one year after the contract signing date and in contract B two and a half years after the signing date.

Contract B is amended four years after the original contract date changing the royalty amount from 6% and 3% to a flat sum which in relation to the cost per unit amounts to almost exactly 3%.

Since ownership of the patent remains the inventors in A, the fact that the established firm pays all costs for maintaining the patents can count as a cash flow right in favor of the inventor. These patent fees are counted off the royalties which reduces the value of the minimum royalty clause.

In contract B, patent ownership is moved from one party to the other. The patent fees are therefore paid in full by the venture capitalists. However, this may also be seen as a cash flow right in favor of the inventor since there is a liquidation clause which entitles the inventor to repurchase the invention in the event of the liquidation of the firm or the termination of the contract for a negligible sum. This will be discussed further later on.

Additional cash flow rights allocated to the inventor include the right to receive a salary based on effort; both contracts contain such a right. According to Holmström (1979), this creates a problem regarding monitoring and measuring the value of this effort. The solution to this problem is the royalties which help bring the inventors' incentives closer to the benefits of the shareholders in each

firm. If the effort he performs is of higher quality the firm will do better and sell more products which will increase his royalties.

One incomplete contract clause included in contract B is that in the event of a patent infringement, the inventor is entitled to 10% of the damages paid. In contract A he will receive all damages since he still owns the invention. Worth noting is that the established firm, in contract A, is still obligated to help the inventor finance any legal action and later discount this from his royalties.

#### **4.3.1 Analysis of cash flow rights**

The figures mentioned above indicate that the established firm is willing to pay a larger upfront sum to keep average costs low while the venture capitalist firm will pay a lower upfront sum and a higher royalty just as hypothesized in the aim of the thesis.

In spite of the fact that all rights are allocated to one party in contract B as theorized by Grossman and Hart (1986), both parties artificially replicate the cash flow rights of premium stock, linking it to the established theories above. Royalties replicate dividends, the lump sum replicates the value of the stock and minimum royalties can be compared to investors expected return on equity.

Choosing the royalty cash flow model enables both contracts to bypass many of the problems discussed in financial contracting theory. Jensen and Meckling's (1976) incentive problem is bypassed since the investor receives his or her compensation based on net sales instead of income. The consumption of perks by managers in each firm is irrelevant since the value of the firm is irrelevant to the inventor.

### **4.4 Control rights**

#### **4.4.1 Board rights**

Board rights in the traditional sense as described by Kaplan and Strömberg (2003) are all allocated to the firms in both contracts. The inventor receives no seats on the board of directors. He or she does however receive the right to an insight into each firm which is a lot greater than that of the public and which is also greater than that of typical shareholders in public firms.

"The inventor shall be entitled at his own expense through an authorized auditor access to Firm A's records and other documents relating to sales of license products for the control of the data allowing the calculation of royalty in accordance with this license agreement." (Contract A, §12)

"The inventor may, at his own expense, take part in bookkeeping and other documentation relating to the invention to verify the calculations of royalties listed in this agreement." (Contract B, §13)

In both contracts he gains a right which entitles him to use his own accountant to review all of the firm's accounting. This gives him an insight which almost corresponds with that of a board member although he receives all information in hindsight. The importance of this right is evident since the inventor needs to have the ability to make sure he isn't being cheated his cash flow rights.

#### **4.4.2 Voting rights**

As stated above under board rights, all voting rights have also been allocated to the firm in both contracts.

#### 4.4.3 Liquidation and redemption rights

No specific liquidation or redemption rights have been allocated to either of the firms in the contracts.

“If Firm A goes insolvent, bankrupt or liquidation, this license shall be repealed with immediate effect, however, with consideration of what is provided in § 20 hereinafter.” (Contract A, §13)

“The right to the invention, covered by this license agreement shall automatically and without any compensation be returned to the inventor. All of Firm A’s signed sublicense agreements shall be transferred without compensation to the inventor and if this is not possible, for reasons beyond Firm A’s control, all revenues generated shall in their entirety go to the inventor.” Contract A, §20)

“If Firm B should become insolvent, go bankrupt or be liquidated, this agreement will be terminated immediately, although § 20 below must be taken into account.” (Contract B, §14)

“In the event of Firm B not paying the guaranteed minimum royalty or if Firm B choose to shut down production of The Invention, the inventor shall have the right to repurchase the patents including all blueprints for a total of five thousand (5 000) Swedish crowns excluding VAT. In the event that the inventor repurchases the invention, all eventual licensing agreements belonging to Firm B involving the invention will transfer to the inventor or, if this is not possible, due to reasons Firm B cannot control, all revenues of such agreements will fall to the inventor.” (Contract B, §20)

As seen in the quotes above, the inventor has the same liquidation and redemption rights in both contracts. In both contracts he is entitled to regaining control and ownership of his invention in the event of liquidation of the firm or termination of the contract. This right also entitles the inventor to receive more than he invested. In both cases he will not only receive his patents and know-how back, he will also receive all improvements made by each firm and blueprints for the latest commercial version of the product involving his invention.

The inventor will also receive the right to all future control and cash-flows generated by eventual sublicensing agreements involving his invention.



#### 4.4.4 Analysis of control rights and liquidation rights

As we have discussed above, the inventor has very limited control rights in both contracts. As stated this can be described by the theory by Grossman and Hart (1986). This has been compensated by contracting on a minimum royalty clause.

The inclusion of the inventor's extensive liquidation and redemption rights corresponds well with Aghion and Bolton's (1992) view that when a firm does badly, control is shifted back to investors. The inventor is seen as an investor with his invention replacing a monetary investment. Kaplan and Strömberg (2003) also concluded that Aghion and Bolton's theories corresponded well with venture capital firms.

One incentive problem that arises in contract B is the fact that when ownership of the patent is transferred to the firm, improvements that are made by the inventor must be contracted on as a contingency. These have been contracted to fall to the firm. This will limit his incentives to improve the invention since his work will automatically fall to the other party. His previous incentives of royalties and salaries will be diminished because of this.

The same problem arises in contract A although here the inventor only loses his right to utilize eventual improvements. These incentive problems arise because of the need to increase control for the firm. This has many similarities to Jensen and Meckling's (1976) optimum financial structure: they found a balance where the cost of perks offsets the cost of risky behavior; this involves the cost of bad incentive schemes offset by the increase of control.

#### 4.5 Contingency clauses

Both contracts have very similar contingency clauses. This can be explained by the fact that the inventor is the same in both contracts and that he has signed away all his rights, except those explicitly mentioned. Because he has signed away all rights, the contingencies are there to protect him and therefore it is in his interest to include the same contingencies in both contracts. Below are examples of contingency clauses regarding third party legal actions from both contracts:

"In the event that any of the patents be subject to legal attacks from third parties, based on the allegation that the existing patents are invalid and that the exploitation of these patents according to the invention turns out to violate third-party patents or rights, with the consequence that Firm A is imposed with financial obligations towards third parties, Firm A shall have the right to terminate this license agreement with immediate effect." (Contract A, §19)

"If any of the patents for the invention should be subject to a legal attack from a third party, based on the assertion that the existing patents are invalid or that the utilization of the invention proves to infringe on the patent or rights of a third party resulting in economic consequences for Firm B towards a third party, Firm B will have the right to terminate this agreement immediately." (Contract B, §19)

##### 4.5.1 Anti-dilution protection

The inventor is automatically given full anti-dilution protection by using the royalty compensation model. His cash-flow rights will never be diluted by new investors. This corresponds well with Kaplan and Strömberg's (2003) findings where there where anti-dilution protection clauses in almost all contracts.

#### **4.5.2 Vesting and non-compete clauses**

None of the contracts have any vesting or non-compete clauses. This might not be needed since competing with one of the firms would eventually lower his or her compensation in the form of royalties.

However, the inventor is obligated in both contracts to contribute with a limited amount of consultant activities and support in any matters involving the know-how of his or her invention. The inventor is also obligated to support in any legal disputes involving the invention with compensation. This compels the inventor to stay linked to the firm as Hart and Moore (1994) discuss.

## 5 Conclusion

In conclusion, we have analysed how an established firm and a venture capital firm formulate their financial contracts when faced with the same investment opportunity. We have applied the different rights used by Kaplan and Strömberg (2003) to identify if existing financial contracting theory is applicable in both contracts. We have also seen if there are any differences in how the established firm and the venture capital firm formulate their contracts.

We find that, except for results involving the capital structure of firms, of which we have no information from our cases, Kaplan and Strömberg's (2003) results correspond well with the contracts analysed in this thesis. For example:

- Both the established firm and the venture capital firm can allocate cash flow rights, board rights, voting rights, liquidation rights and other control rights to solve agency problems with their financial contracts.
- The allocation of control rights depending on the performance of the firm as discussed by Aghion and Bolton (1992) reflect both our contracts well.
- Contingency contracting is common in both contracts and corresponds well with the theories of Hart and Moore (1994, 1998) and Grossman and Hart (1986).

Additional findings show that, at least in this particular case, established firms contracts and venture capitalist contracts will not differ much when faced with the same investment opportunity.

One difference in this case is that the established firm has chosen an exclusive licensing solution while the venture capitalist firm chose an ownership solution. However, despite the use of different ownership solutions, the end result in both contracts remains very similar.

The other difference is that the established firm invested a greater lump sum in order to keep average costs down while the venture capital firm seeks to lower initial start up costs at the expense of higher average costs.

### 5.1 Further studies

The results of this thesis only hint at a possible correlation between venture capital firms and established firms contracts. To confirm this, an empirical study should be performed with a greater number of established firms. However, gaining access to such confidential information and finding an appropriate amount of cases where both established firms and venture capitalists have been involved may prove difficult.

Another suggestion for further studies is to perform the same type of study that Kaplan and Strömberg (2003) performed with a large amount of established firms to show that established firms financial contracts also correspond with established financial theory.

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### **6.3 Online resources**

SCB, Statistics Sweden's official homepage,

[http://www.scb.se/Pages/TableAndChart\\_272151.aspx](http://www.scb.se/Pages/TableAndChart_272151.aspx), (Accessed on 2010-12-16)

### **6.4 Other**

Contract A, 1997, Contract between the established firm and the inventor

Contract B, 2003, Contract between the venture capitalists and the inventor

Amendment to Contract A, 2007, Amendment to the contract between the venture capitalists and the inventor

Correspondence, Documentation consisting of letters, emails and research reports sent between interested firms and the inventor.