

**University of Cape Town**

**Faculty of Commerce**

**Department of Accounting**

**The Characteristics of Successful and Unsuccessful Resolution of  
Corporate Failure on the Johannesburg Stock Exchange**

**Submitted in partial fulfilment of the requirements for the  
Master of Commerce (Financial Management) degree.**

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## DECLARATION

I the undersigned hereby declare that the work contained in this dissertation is my own original work and has not previously in its entirety or in part been submitted at any university for a degree.

Signature:

Date: 24-04-98

## **Dedication**

For my mother and my brother,  
May your souls repose in peace.

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## Abstract

The study analyses the incentives and mechanisms of failing firms on the Johannesburg Stock Exchange that restructure their claims following a decline in performance and value. The study also analyses patterns for restructuring of failing firms. The sample contains firms that were delisted between 1986 and 1996. Firms that were delisted and re-instated number 28 and constitute the sample for firms that restructured successfully their claims. Firms that were delisted on the JSE following an unsuccessful debt restructuring number 32 and constitute the sample for unsuccessful firms.

The study finds that firms that restructured successfully on the JSE have more intangible assets, less bank debt and few creditors. This finding means that South African corporate restructuring activities relies more on assets characteristics rather than financial characteristics.

Analysis of patterns for restructuring reveals that successful firms are smaller by size, and experienced a substantial decline in cash flow performance and liquidity. Successful firms have a higher market book ratio and present a high level of short-term debt maturity. Analysis of ownership change on the onset of financial failure reveals that unsuccessful firms experienced a substantial decline in minority interests ownership. The decline in minority interests reveals that the market can recognize firm with substantial going concern value.

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## Chapter 1 General Introduction

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### 1.1. Background to problem.

The modern theory of finance defines a firm as a nexus of an interrelated set of contracts among various interested parties: shareholders, managers, bondholders, and other stakeholders which include customers, suppliers, employees and society at large. It is a legal fiction within which conflicting objectives of these disparate individuals are brought into equilibrium so that the firm can make decisions to maximise their welfare. Although these stakeholders have a common interest in the firm's success, the modern theory of finance recognises that financial contracts are incomplete and may fail to constrain future decisions. This has led to the analysis of the allocation of control and decision rights across these different classes of claimholders in the firm.

Financial contracts among claimholders are designed for the firm to implement optimal financial and investment decisions. However, the separation of ownership and control in modern organisations can lead to sub-optimal decision making, primarily for two reasons: First, the assignment of control rights to a class of investors who enjoy the right to make decisions concerning investment and the distribution of cash flow results in sub-optimal decision making because the controlling party has an incentive to invest inefficiently, and is permitted to do so. This is because management, acting in the stockholders' interest, has incentives to design the firm's operating characteristics and financial structure in ways which benefit a specific class of stockholders. Second, the controlling party assumes control because non

controlling parties are passive and fail to monitor the actions of the controlling party and enforce wealth maximisation policies.

The effects of the structure of implicit and explicit ownership claims on the investment and financing decisions of the controlling party are not often a problem for a company as a going concern. Adverse effects of these claims are evident only when a firm is experiencing poor performance and a decline in value. There are adverse effects on a firm's value as a result of leverage in bringing the going concern value closer to liquidation value. In this case, the firm runs the risk of defaulting on contractual explicit claims of debtholders.

Legislation on ownership contracts specifies how resources are to be allocated between investors and a firm as a going concern. This is not the case when a firm breaches its contractual promises to claimholders. If leverage can produce such effects on the firm's value, why do firms borrow? The most obvious reason for seeking a combination of alternative sources of finance is to increase the availability of funds. In addition, a firm can achieve higher returns for shareholders by borrowing.

There are competing views on how leverage affects the economic activity of the firm and its value. The first view, implicit in the theory on leverage, argues that, in borrowing, a firm improves economic performance and prevents corporate waste. It is argued that the more debt in the capital structure, the lower the corporate tax liability, the higher the after-tax cash flow, and the greater the market value of the firm [Modigliani and Miller (1958)]. This is the Modigliani and Miller irrelevance theory on capital structure. The irrelevance theory suggests that, in the absence of bankruptcy

costs and tax subsidies on interest, the value of the firm is independent of its financial structure. The theory is based on the assumption that the probability distribution of future cash flow to the firm is independent of the structure of its capital whether financed by debt or equity. Further, the irrelevance theory implies that a firm can be entirely financed with debt.

The principle of leverage relies on the fact that the firm achieves a return on assets which is greater than the cost of finance to long-term lenders of funds. Debt providers do not share in the profits but receive contractual payments and interest only. Any returns that can be generated above the contractual payment and interest accrue to the shareholders. Shareholders are entitled to unlimited claims on the firm's assets and operating income of the firm after creditors' claims have been met. This is consistent with the risk/return notion that a high expected return is always accompanied by a higher risk. Equity providers give lenders the first claims on the firm's assets and operating income. In return for bearing more risk per rand invested, they earn a higher return per rand invested. Lenders accept a lower return per rand invested because they have a safer claim on the firm's assets.

The principle of leverage and the risk/return notion cannot alter the behaviour of management and securityholders for two reasons:

- i) The theory presupposes that there is a unique optimal set of financial contracts which maximises the value of the firm and that there are benefits associated with the inclusion of risky debt in the capital structure. It assumes that the inclusion of risky debt induces management to maximise the value of the firm rather than maximising the value of equity.

ii) As a consequence of (i), financial contracts between management and claimholders can be written without cost and enforced. This is because external market forces and the possibility of restructuring the firm's claims provide an efficient incentive for managers to follow a firm value-maximising policy.

The second reason, based on theories on leverage that argue that firms balance the tax advantage of debt and the greater cost of financial distress, is that large debt burdens constrain investment and threaten the financial stability of firms. High leverage increases the probability of occurrence of liquidation of a firm's assets when it cannot meet its contractual obligations to debtholders and the firm's constituencies. It also raises concern about what happens to these failing firms and on the structure of different claims.

On the one hand, Haugen and Senbet (1978) and Jensen (1989b) argue that as long as a firm has good prospects, financial failure will have no real impact on the firm's value. This is a version of the Coase theorem (1960), which implies that in a frictionless world there are no economic costs imposed by the threat of bankruptcy. If the firm as a going concern can be made profitable by changing its capital structure, efficient recontracting would result in a restructuring of financial claims to maximise the firm's value. Indeed, if there were costs to transferring ownership rights, they could be eliminated by selling new shares in the firm and using the proceeds to pay impaired creditors. From an efficiency standpoint, financial failure does not matter because the value created by leverage does not come, necessarily, at the price of an increased probability of corporate failure. A more efficiently run firm can carry a higher debt burden with an equal or reduced probability of failure. The argument put

forward is that leverage has no real impact on the firm's value because, as long as the firm has good investment opportunities, the ownership claims can be repackaged to assure its survival.

The above view suggests that the operating value of the firm can be preserved by privately resolving conflicts among claimholders rather than filing for bankruptcy or liquidation. On the other hand, another argument suggests that conflicting interests of claimholders may induce management to maximise the value of a particular set of security holders rather than maximising firm value. The management bias can make financial recontracting difficult and may motivate debtholders to liquidate the firm even though it is collectively inefficient for them to do so.

These arguments are based on the theory of the agency costs of debt. The theory suggests that the choice of capital structure of a firm affects the incentives of individuals, that is, individuals whose decisions determine the allocation of both the income stream and control rights over securities. It presupposes the existence of conflicts of interests between the different classes of claimants to the firm's cash flow. If the allocation of rights belongs only to one set of security holders of the firm's assets, then the investment and financing policies of the firm may maximise the value of one set of securities and not maximise the value of the firm.

The implication is that, in case of default, there is a bias favouring liquidation unless the value that can be pledged to impaired non-active and outside security holders exceeds the liquidation value. In that case there will be efficient restructuring.

The restructuring of financial claims often creates value for all classes of security holders of the firm's assets. This reorganisation probably would have created value before a firm entered a state of financial default, but the impetus for changes provided by the presence of risky debt may be absent in the capital structure.

Leverage in this case acts as a catalyst in creating an illusion of financial failure, and thus precipitates painful but necessary changes [Stewart (1990)]. The changes that occur after financial failure are unlikely to occur in all equity firms. This is because without leverage and poor performance, a decline in a firm's value does not necessarily lead to corporate failure.

Similarly, Gilson (1990) finds that the possibility that corporate failure could result in beneficial outcomes was generally ignored in finance. New empirical evidence [Brealey and Myers (1996), Jensen (1986), Kaplan (1989b), Smith (1990), Baker and Wruck (1989), Kaplan and Stein (1990), Titman (1984), Gilson (1989,1990), Altman (1984), Weiss (1990), Gilson, John and Lang (1990) and Cutler and Summers (1988)] demonstrates that financial failure has both benefits and costs, and that financial and ownership structures affect the net cost of failure. Financial failure is often accompanied by changes in management, governance and structure. The objective of such organisational change is to create value by improving the use of resources through a workout or liquidation process, or under the supervision of a bankruptcy court.

Wruck (1990) finds that corporations facing failure experience a variety of situations which affect the value of claims of different classes of security holders. These situations raise a question of agency relationship between shareholders, managers and creditors. The questions that arise here are whether a levered firm facing failure stemming from poor performance or decrease in value can be restored and a positive going concern value be re-established, or will liquidation value result in a high value for the firm's claimholders? Can the interests of the central parties (shareholders, managers, creditors and other activities stakeholders) be balanced? What are the effects on the going concern value and claims of the different parties in a firm? What are the incentives of stockholders, bondholders and managers to accept a bankruptcy, reorganisation or liquidation of firm's assets?

## **1.2. Research and problem.**

The ability of failing firms to respond to a decline in performance and the incentives of failing firms to accept a liquidation or restructuring process are important factors that affect their organisational efficiency. The present study is based on the suggestion of Jensen (1989) that private contractual arrangements for resolving financial failure represent a viable and less costly alternative to liquidation. The objective is to analyse the nature of corporate reorganisation activities during poor performance for a sample of South African listed companies on the Johannesburg Stock Exchange. It also investigates the mechanisms that allow companies delisted from the Johannesburg Stock Exchange to be re-instated on the stock market.

The study is motivated by the different contractual relationships that characterise most South African firms. Berger and Ofek (1996b) and Denis, Denis and Sarin (1997) argue that firms implementing corporate refocusing programs often do so in the presence of external control pressure such as takeover attempts and block share repurchase. Little evidence exists on restructuring mechanisms in South Africa where joint ownership of debt and equity by holding companies is supposed to result in stringent managerial monitoring and create incentives to value-maximising decisions, as suggested by Jensen (1989a,b).

This study uses a combination of definitions for financial failure. Gilson (1990) defines failure as the inability to pay debts as they fall due, entrance into bankruptcy proceedings or an explicit agreement to reduce debts. Extending this definition, Altman (1983) defines failure as each situation where the realised rate of return on invested capital, with allowances for risk considerations, is significantly and continually lower than the prevailing rates on similar investments. In this situation, failure is not synonymous with discontinuance of productive operations. It should be noted that a company can be an economic failure for many years yet never fail to meet its current obligations.

### **1.3. Objectives of research.**

The objectives of the research presented here were to:

1. Identify different mechanisms to resolve corporate failure at the J.S.E,
2. Analyse patterns for reorganisation.

#### **1.4. Organisation of thesis.**

The thesis is organised as follows. The second chapter discusses the impediments to financial recontracting and incentive effects among the different classes of firm's claimholders. The third chapter presents the development of the hypothesis and the methodology for financial recontracting in a South African environment. The fourth chapter discusses the mechanisms and incentives of corporate failure resolution on the Johannesburg Stock Exchange. The following chapters consider the patterns for reorganisation of failing firms. The fifth chapter analyses sample characteristics by size, cash flow performance and liquidity and the recontracting period. Chapter six discusses leverage characteristics. The seventh chapter assesses the financing of assets patterns. The eighth chapter considers the maturity of debt. The ninth chapter assesses the ownership structure change on the onset of financial failure. The last chapter summarises the argument leading to a general conclusion.

## Chapter 2 Impediments to Financial Restructuring

### Introduction.

The conflicting incentives of claimholders can create an impediment to financial restructuring. Since bondholders have the priority over claims to liquidation proceeds, they are more likely than stockholders to choose to liquidate the company even if it is inefficient to do so. Moreover, when the debt is diffusely held, informational asymmetries can arise between poorly informed outside bondholders and better informed managers or insiders of the firm. Bondholders are not likely to be well informed about the firm and may not know if it is profitable to provide new capital or to give interest and principal concessions. The last impediment to financial restructuring is holdout problems, when debt is held by a large number of diffuse creditors. The chapter analyses the impediments to financial restructuring by failing firms. In section 2.1 the impediments created by the agency costs of debt are analysed, while section 2.2 focuses on the problem created by asymmetric information. In section 2.3 impediments created by holdout problems are discussed.

## 2.1. Agency costs of debt.

The agency theory identifies two types of conflicts related to financial policy: the manager-shareholder and shareholder-bondholder conflicts. The first area of conflict stems from the separation of ownership and control. The manager-entrepreneur who does not own a significant fraction of equity in the firm is likely to be more directly interested in maximising his own utility than the value of the firm. This creates a conflict between the manager-entrepreneur and outside shareholders. The agency cost derives from three sources:

- i) The first source of conflict arises from the management's tendency to consume some of the firm resources in the form of various perquisites. As Jensen and Meckling (1976) point out, managers have an incentive to expand the size of their firm beyond the point at which shareholders' wealth is maximised. Growth increases managers' power and perquisites by increasing the resources at their command. This is because changes in managerial compensation are related to sales. Growth also tends to increase managerial compensation;
- ii) The second source of conflict arises from the fact that managers have a greater incentive to shirk responsibilities as their equity interest falls. They will trade off the costs of putting in additional effort against the marginal benefits. With a fixed salary and a small equity claim, professional managers are unlikely to devote energy to the company equivalent to that put forth by an entrepreneur;
- iii) Finally, risk aversion can cause managers to forego profitable investment opportunities. Although the risk of potential loss from an investment may be diversified in the capital markets, it is more difficult for managers to diversify the risks associated with losing their salary and reputation. Foregoing profitable but risky

investment amounts to the purchase by management of career insurance at the shareholders' expense. These inefficiencies of the manager-entrepreneur are reduced when the fraction of equity owned by the manager is large. Holding constant the manager-entrepreneur's absolute investment in the firm, and increases in the fraction of the firm financed by debt, increase the manager's share of equity and mitigate the loss due to conflicts between the entrepreneur-manager and shareholders.

The benefit of debt in this case is twofold: First, the presence of debt in the capital structure increases the riskiness of the firm's assets. In addition, if failure is costly for the manager-entrepreneur, the loss of reputation and the benefits of control can create an incentive for managers to work harder, consume fewer perquisites and make better investment decisions [Grossman and Hart (1982)]. Second, because the value of common stocks equals the market value of the firm (that is, total assets minus the value of its liabilities), the manager-entrepreneur, acting in stockholders' interests, has incentives to design the firm's operating characteristics and financial structure in a way which can increase shareholders' wealth by reducing the value of the bonds.

This possibility is at the root of the stockholder-bondholder conflict. Smith and Warner (1979) identify four sources of conflicts that arise from management's endogenous policies on investment, financing and dividends:

i) Dividend payment: management can increase the dividend rate for stockholders by reducing the possibility to finance positive net present value investment. In buying the bonds, bondholders assume that the firm will maintain constant its dividend policy. At the limit, management can sell all the firm's assets and pay a liquidating dividend to stockholders but leave bondholders with a worthless claim.

- ii) Claim dilution: the claims of the firm's bondholders can be reduced when management finances new investment by issuing additional debt of the same or higher priority than the initial debt.
- iii) Asset substitution: Jensen and Meckling(1976) find that a high debt level can induce management to opt for excessively risky investment projects. The incentive for such a move is that limited liability provision in debt contracts implies that risky projects will provide higher mean returns to stockholders, zero in low states of nature and high in good states. With risky investment, the value of stockholders' equity rises while the bondholder's claim is reduced by increasing the firm variance rate;
- iv) Underinvestment: Myers (1977) suggests that management can have incentives to reject investment with a positive net present value if the benefit from accepting the project accrues to bondholders.

### **2.1.1. Conflicts between equityholders and manager-entrepreneurs.**

The relationship between managerial ownership and firm performance has been the focus of considerable attention in most literature on agency costs [Jensen and Meckling (1976) and Galai and Masulis (1976)]. It is contended that, as management holds a bigger stake in the firm's future cash flow, its interests become better aligned with those of shareholders. As management's stake increases, its interests may become less well aligned for several reasons. Agrawal and Mandelker (1987) and Saunders, Strock and Travlos (1990) note that managers' increased non-human wealth investment in the firm may become so large as to make them increasingly sensitive to the potentially undiversifiable, non-systematic risk of the firm. If their human wealth is also job-specific this will reinforce managerial risk aversion at high managerial

stake holding levels. Williamson (1987) states that, if managers derive more private benefit as their stockholding increases, managers are likely to limit risk to protect their benefits in the form of perquisites.

Ownership of equity also implies votes to protect its position, contrary to the interests of shareholders, and to pursue its control over the firm assets even when the value of the firm is less than liquidation costs. Thus, management's' and equityholders' interests differ in the continuation of operations when the value of the firm is decreasing or is less than its liquidation value. According to Harris and Raviv (1990a) and Stultz (1990), managers and stockholders may well disagree over the continuation of an operation. Harris and Raviv (1990a) point out that managers always want to continue the firm's current operating decisions, even if liquidation is preferred by stockholders. Managers are not only reluctant to liquidate under any circumstance but are also unwilling to provide detailed information to stockholders that could result in this outcome.

The increase in costs due to investigation by stockholders can be offset by the presence of debt for two reasons. First, debt serves as a disciplining device. This is because default allows bondholders the option of forcing the firm into liquidation. A large debt level favours the decision to liquidate because it makes failure more likely. In the absence of failure, it is assumed that incumbent management will not liquidate the firm even if the assets are worth more in their next best alternative use. Moreover, debt also generates information that can be used by outside shareholders to evaluate major operating decisions including liquidation.

According to Stultz (1990), management does not maximise shareholder wealth but maximises investment, and wants to invest all available funds even if paying cash is better for investors. Management is likely to pursue its objective because shareholders are not aware of either cash flow or investment.

The differences in these models result from their assumptions. Stulz's model assumes that managers have no equity ownership in the firm and they receive utility from managing a large firm, and as a consequence, have an incentive to increase the size of the firm. This incentive leads management to undertake negative net present value investments. In the model of Harris and Raviv (1990a), the assertion of control by investors through bankruptcy entails cost related to the production of information, used in the liquidation decision, about the firm's prospects. The costs of debt in Stultz's model is that debt payment may more than exhaust free cash, reducing the funds available for profitable investment. The model assumes that managers cannot credibly communicate cash flow to shareholders, and the presence of debt in the capital structure ensures that managers exploit fully all net present value investment opportunities. Debt reduces the free cash flow problem by forcing managers to pay out all free cash flow as a dividend.

Another approach links job-specific skills, asset characteristics and capital structure to the benefits of financial leverage and the costs of liquidation. Williamson (1988) suggests that assets that are more redeployable should be financed with debt to avoid the liquidation of assets at a discount to their going concern value.

In contrast, Shleifer and Vishny (1992) focus on potential buyers of assets. They argue that all assets are not redeployable, since most assets are quite specialised. When firms have trouble meeting debt payments and sell assets or are liquidated, the highest valuation obtained from potential buyers of these assets is likely to be from other firms in the industry. Profitability within the industry and across the economy affects the price at which assets can be transferred to their best use. Liquidation costs can be high because industry buyers of these assets are likely to be credit-constrained when the owners of these assets need to sell them. Worse, assets can be sold to industries who do not know how to manage them well. The buyer faces an agency cost of hiring specialists to run these assets. Moreover, the buyer fears overpaying because he cannot value the assets properly. Therefore assets with illiquid secondary market value will be able to support less debt. This is because, like firm-specific assets, they impose greater liquidation costs when a firm defaults. As in Harris and Raviv's model, firms with higher liquidation costs and tangible assets, and/or firms with lower liquidation investigation costs will have more debt. They will be more likely to default but will have higher market values than similar firms with lower liquidation value and/or higher investigation costs. However, growth and cyclical assets are considered to be poor candidates for debt finance because they have a high probability of a low cash flow and a higher probability of default on debt. Even an asset with a reasonable chance of default can have a higher debt capacity, that is, if it can be easily sold for fundamental value when default occurs. If on the other hand, cyclical and growth assets are extremely illiquid, costs of financial failure are large. Financing these assets with debt is costly for managers. This cost is, however, not applicable to managers of conglomerates that are good candidates for debt finance.

This is true for several reasons other than the usual reason that conglomerates tend to have a lower cash flow volatility and therefore it is less probable that they will be unable to meet their debt repayments. First, a conglomerate in need of cash has the option of selling assets in several different industries. This allows the conglomerate whose underlying industries are illiquid to avoid selling assets as long as it has sufficient assets in liquid industries. Second, a conglomerate has the option of selling its assets off in smaller, more liquid pieces without adversely affecting either the value of the divested assets or assets kept in the firm. This argument also applies to firms that are not literally conglomerates. All other things being equal, a business consisting of a loose affiliation of different parts should have a higher debt capacity. The presence of risky debt can mitigate the over-investment problem of managers, because debt will provide managers with the discipline of the financial market [Jensen (1986)].

### 2.1.2 Conflicts between equityholders and bondholders.

Of the group comprising the firm, the largest and perhaps the most important two are the bondholders and the stockholders. Stockholders control the firm and are expected to choose investment and financial policies that maximise their own wealth. If permitted, they could transfer wealth from bondholders by choosing policies that increase the risk of outstanding bonds. However, under the costly contracting hypothesis, there is a unique set of financial contracts that maximise the value of the firm rather than the value of equity. The sub-optimal decision making occurs because the controlling party has an incentive to invest inefficiently and his action is not monitored. In an environment of incomplete contracting, contracting parties can design their securities to mitigate the incentive problem before it arises, that is, by including protective provisions in their debt contracts. Various financial contracting methods have been examined for their potential in mitigating the agency problems. These methods can be broadly classified into three categories:

- i) Devising ways which allow a firm to eliminate existing debt or neutralise its impact prior to undertaking a new project.

Myers (1977) finds that one way to neutralise debt is to shorten the maturity of outstanding debt. Debt has to mature before an investment option can be exercised to avoid sub-optimal investment decision. Borrowing short in itself reduces monitoring costs. It does offer continuous and gradual renegotiation in which the firm can in principle shift back at any time to all equity financing or to another source of debt

capital, thus allowing the firm to maintain a continuous, intimate and flexible relationship. This single assumption period in which a firm can undertake a new debt enforces identity between the life of the project and the life of the bonds. All options are exercised at the same point. Green (1984) finds that deviations from behaviour that maximises net present value only occurs when a firm undertakes two projects which are discriminated only by their relative risk.

Smith and Warner (1979) criticise this covenant as not optimal because the opportunity set of the firm evolves over time and may not be financed with equity or reduced dividend. Instead of reducing the risk incentive problem of stockholders, most of the gains go to bondholders. This increases their coverage on debt, and reduces the default borne by them.

Bodie and Taggart (1978) analyse the use of callable debt to mitigate this problem. It is in the interest of shareholders to include a call option on debt even if bondholders have prior knowledge that the call option will be exercised. It may create an externality to shareholders but if there is a chance to default, bondholders have a partial share in the residual value of the assets, hence they participate in any changes in its fortune. If the firm makes profitable future investments, only part of the net benefit will be captured by shareholders and the rest will accrue to the bondholders. Since shareholders are not able to reap the full benefit of additional investment, they will wish to invest less than would otherwise be optimal. However, if the bonds are callable, shareholders can retire debt at a fixed price and then negotiate an interest rate on new debt that fully reflects the value of the additional investments. The incentives

of shareholders to invest are no longer weakened in this case. This is because they are in a position to capture its full marginal benefit.

Why do firms never issue non-callable long-term bonds? The problem of uncertainty of future interest rates as the main source of the option's value. According to this line of reasoning the refunding decision is essentially a zero sum game in which the shareholders gain is the bondholders loss. In an efficient capital market callable and non-callable bonds should coexist with the price differential between them reflecting the value of the call option. Bodie and Taggart (1978) show that the call option on corporate bonds need not be a zero sum game between the bondholders and shareholders. If the firm faces future investment opportunities, non-callable debt weakens its incentives to invest. Shareholders will not capture the full value of these opportunities but an inclusion of call options can restore the proper incentives. Thus the firm is allowed to renegotiate its debt at the time it undertakes the investment. Even when interest rates are such that bondholders are indifferent between callable and non-callable bonds, the firm's growth opportunities may give shareholders a definite preference for callable bonds. Furthermore, in an inefficient market the shareholders will not be worse off with callable debt. Together these two results constitute a strong case for including a call option on long-term corporate bond.

Jensen and Meckling (1976), Mikkelson (1978) and Green (1984) discuss the use of convertible debt. It is an inexpensive way for the insider with both equity and debt to eliminate a large part of the risk incentive problem borne by debt. Convertible debt is capable of neutralising the conflicts between stockholders and bondholders by giving the bondholders an equity claim. This reduces the incentives for the firm to take on

unprofitable, high variance-increasing projects. With convertible debt, risk-increasing activities increase the value of the conversion option, and thus reduce the gains to stockholders from taking high risk projects by transferring part of the gains to convertible bondholders.

ii) Designing ex-ante debt contracts to mitigate the agency cost of debt.

A common characteristic of these ex-ante contracts is that they specify the relative seniority of the claims of existing debtholders vis-à-vis present and future security holders. The seniority rules change when there is informational asymmetry between stockholders and bondholders such that only stockholders know the true value of the new project at the time of financing. If this perceived risk is sufficiently large (small), it is optimal to allow all new debt to be subordinated (senior) to the existing debt. Otherwise, the optimal rule is to give new debtholders sufficient seniority to equate their expected cash flow in the same state. This solution is analogous to project financing in that it obtains the maximum separation between claims on the new project and those on existing assets within the constraints imposed by informational asymmetry. An implication of the above results is that an important determinant of the ex-ante seniority rule is the collateral value of the new project. If the expected cash flow from a project's dependence on default is low, then it is optimal to make new debt strictly subordinate. If the expected cash flow is sufficiently large, then it is optimal to retain the option to issue non-subordinated debt. Seniority rules are capable of reducing the underinvestment incentives without exacerbating over-investment.

The seniority rule also alleviates the under-investment problem, while minimising the over-investment problem. This is because project financing separates a new project as

much as possible from the existing assets without making the new project into a separate and independent firm. It is only possible with symmetric information that an optimal seniority rule can issue debt through project financing, with the new debtholders being given first claim on a new project, but without recourse to existing assets.

Another way in which ex ante debt contracts have been suggested to reduce the agency problem is collateralization of assets, which makes it difficult for shareholders to substitute low risk projects with high risk projects [Smith and Warner (1970)]. One reason to restrict the sale of the substantial units of the firm's assets is that the proceeds of assets sold piecemeal will be less than if sold as a going concern. It makes asset substitution expensive to stockholders by requiring that a fraction of the proceeds from the sale of assets be used for the retirement of the firm's debt.

Kalay (1982) suggests that a limitation of dividend payment has the potential to cause a wealth transfer. Thus both debt and investment-financed dividends can be limited. This allows unlimited amounts of dividend payment that are financed by new issues of equity and the possibility of restricting the stockholders' legal ability of dividend payment.

Smith and Warner (1979) consider the use of secured debt and leasing to alleviate the underinvestment problem. This alleviates conflicts of interests between corporate fixed and residual claimholders. They argue that a long-term non-callable lease commits the firm to use a particular set of assets over the life of the lease and then control the asset substitution problem. However, the legal standing of leases implies

that their use reduces the coverage on standing fixed claims. These claims induce corporates to limit leasing activities through provisions in corporate bond contracts.

In addition, Stultz and Johnson (1985) and Smith and Wakeman (1984) argue that the option to enter a long-term non-cancellable lease also affects the incentives problem. They suggest that this option limits the under-investment problem by allowing the firm to acquire a new project and segregating the claim on the project's cash flow. Thus, some assets are acquired through long-term leases. If the project is financed with secured debt, but not with unsecured debt, the project's payoffs would accrue as a windfall to owners of previously unsecured debt.

While a long-term lease is similar to secured debt in a number of ways, it differs in others. If the value of a pledged asset in bankruptcy is less than the firm value of the associated secured debt claim, the secured creditors also have an unsecured claim on the firm's other assets for the remainder. The lessor's claims on the firm's other asset is limited to one's year lease payments. In a lease, the lessors retain title to the asset only as long as there is no default on the lease payments. Should the lessee default, it is simpler for a lessor to regain physical possession of a leased asset either prior to or after the declaration of bankruptcy than for a secured creditor to acquire the pledged assets.

Ang and Peterson (1984) have examined the trade off between leasing and debt and have found that the use of leases and debt is complementary in that firms that issue more debt tend to engage in more leasing. This result should not be surprising. Although leases and debts are substitutes, for a given firm, the characteristics of

investment opportunity sets that provide high debt capacity also tend to provide more profitable leasing opportunities.

John and Nachman (1985) focus on the reputation of investment incentives for firms with risky debt when it is common knowledge that the firm has to return to the debt market for further financing. The investment decision is modelled as private action on the part of insiders because outside claimants would find it costly to monitor the investment policy. In such an environment, it is well known that there will be underinvestment. The insiders' current investment policy is influenced by the quality of the investment opportunities they will have in the future. Firms expecting better investment opportunities optimally curtail the degree of underinvestment, moving closer towards the pareto optimal levels in anticipation of higher pricing of their bonds in the debt market. The bond market would find it rational to price the new issue of bonds conditionally on the past investment policy of the firms. Firms with better investment and repayment records gain in maintaining reputation and higher pricing of their bonds. The repayment behaviour, as well as the amount borrowed, conveys information to the bond market. The equilibrium here is also characterised by reputation effects on underinvestment incentives leading to reduced agency costs. The higher the ratings of bonds the better the investment and repayment records and the lower the amount borrowed. In addition, reputation can alleviate the asset substitution effects, that is, the incentives of leveraged equityholders to choose risky, negative net present value investments.

Diamond (1989) and Hirschleifer and Thakor (1989) show how managers or firms have incentives to pursue relatively safe projects to protect their reputations.

Diamond's model is concerned with a firm's reputation for choosing projects that assure debt repayment. There are two possible investment projects: a safe positive net present value project and a risky negative net present value project. The risky project can have one of two payoffs, success or failure. Both projects require the same initial investment that might be financed by debt. Three scenarios are possible: One type has access only to the safe project, one type has access to the risky project, and one type has access to both. Since investors cannot distinguish firms ex-ante, the initial lending rate reflects their beliefs about the project chosen by firms on average. Returns from safe projects suffice to pay the debtholders (even if the firm is believed by investors to have only the risky projects). However, returns from risky projects allow repayment only if the project is successful; this is because of the asset substitution problem, if the firm has a choice of projects. Myopic maximisation of equity value would lead the firm to choose the risky projects. If the firm can convince lenders that it only has safe projects, it will enjoy a lower lending rate. Since lenders can observe only a firm's default history, it is possible for a firm to build a reputation for having safe projects by not defaulting. The longer the firm's history of repaying its debt, the better its reputation, and the lower its borrowing cost. Therefore, more established older firms find it optimal to choose the safe projects, and not engage in asset substitution, to avoid losing a valuable reputation. Young firms with little reputation may choose risky projects. If they survive without a default they will eventually switch to safe projects. As a result, firms with a long track record will have lower default rates and lower cost of debt than firms with brief histories.

Although, the amount of debt is fixed in Diamond's model, it is plausible that an extension of the model would yield the result that younger firms have less debt than

older ones, *ceteris paribus*. Managers may also have an incentive to pursue relatively safe projects out of a concern for their reputation. Hirshleifer and Thakor (1989) consider a manager who has a choice of two projects, each with only two outcomes - success or failure. Failure means the same for both projects, but from the point of view of shareholders, the high risk return project yields both higher expected returns and higher returns if it succeeds. If it is supposed that from the managers' point of view success of the two projects is equivalent, the managerial labour market can only distinguish between success and failure. Thus the manager maximises the probability of success while shareholders prefer expected return. If the safer project has a higher probability of success, the manager will choose it even if the other project is better for equity holders. This behaviour of managers reduces the agency cost of debt. Thus, if managers are susceptible to such a reputation effect, the firm may be expected to have more debt than otherwise.

Hirshleifer and Thakor (1989) argue that such managers are more likely to be targets of a takeover and more susceptible to the reputation effect. These firms are expected to have more debt, *ceteris paribus*. Conversely, firms that have adopted anti-take-over measures will use less debt, *ceteris paribus*.

iii) Renegotiation of prior contract to resolve conflicts between different security holders.

Some models consider renegotiation as a bargaining game between bondholders and stockholders. Bernardo and Talley (1996) analyse the possibility for management, acting strategically on behalf of shareholders, to select inefficient investment projects to enhance their bargaining positions vis-à-vis bondholders. Holding the upside

potential of an investment project fixed, managers/shareholders prefer projects with lower payoffs in states of failure. This induces individual bondholders to accept poorer terms in financial recontracting, thus generating a greater residual for shareholders in states of solvency.

Bergman and Callen (1990) consider a stockholders'-oriented management as one which credibly threatens to run down firm assets to force concessions from creditors. As long as the potential loss is small for managers, threats can be communicated and bondholders can accede to reasonable demand.

Diamond (1993) considers competition among short and long-term bondholders. Short-term lenders have an advantage over long term lenders in renegotiation. This is because if short-term lenders are not fully paid, they can choose to liquidate the firm. It is in the interests of long-term lenders to accept their conditions because the claims can be diluted without their consent. Therefore firms should not provide senior debt to any class of bondholders if competitive access to refinancing is available.

Myers (1977) suggests that because of the difficulty of writing and enforcing contracts which require firm value maximising decisions, claimholders can either solve the problems ex-ante or ex-post. If creditors and shareholders find themselves in a position where the net present value of an investment project is positive but less than the payment promised to creditors, then it is in the interests of both sides to renegotiate the debt contract. Renegotiation may lead to an arrangement in which creditors accept less than the face amount of their securities in exchange or the owners' commitment to put up funds for further investment. The arrangement may

call for either party to buy out the other, or find for a third party to buy out the first two.

Similarly, Haugen and Senbet (1978, 1988) argue that in the light of market impediments to informal reorganisation, the inclusion of provisions in corporate charter and bond indentures could resolve financial failure costlessly. The informal reorganisation of capital structure can be accomplished in a number of different ways. The stockholders can repurchase the debt at its existing market value. Alternatively, the bondholders can purchase the stock. Finally outsiders can purchase both the debt and equity at the total market value. The costs of these private mechanisms are small and should form an upper limit on the costs of managing corporate failure. Jensen (1989, 1991) has also argued that since such private restructuring represents an alternative to formal bankruptcy proceedings, it pays to privatise bankruptcy if this informal mechanism is cost-efficient.

## 2.2. Asymmetric information.

A significant portion of the theory on asymmetric information in corporate finance can be categorised into two distinct paradigms, agency model and financial signalling models. In the agency model, the focus is on the structure of claims on corporate assets and the resulting conflicting interests. Moral hazard and incomplete contracting ability lie at the centre of the agency relationship. Monitoring costs and widely dispersed securities prevent outside claimants from observing completely some actions of corporate insiders: for example, the consumption of perquisites and investment risk choices. Financial signalling models, on the other hand, deal with asymmetric information between corporate insiders and the outsiders in the market. They deal with crucial aspects of the cash flow generating process at the time of financing. Since outsiders need such information to compute the true value of their external claims, insiders may try to convey signals about the quality of their firm through appropriate observable corporate actions.

It is impossible for outsiders to know managerial preferences, attitudes to risk and wealth effects of their decisions. Through capital structure choices they expect that firms of certain quality are associated with certain types of corporate financing. According to the asymmetric information hypothesis, changes in financial leverage convey management's expectations about the firm's prospects. It assumes that managers and insiders possess superior information relative to investors about the intrinsic value of the firm. These models suggest that changes in the firm's capital structure are valid signals that allow managers to convey the inside information to

investors. Leland and Pyle (1977) consider the fractional ownership of a firm retained by a manager-entrepreneur as a signal of firm quality. If the manager-entrepreneur's fraction of ownership increases, the value of the firm correspondingly increases, and if the level of ownership is sufficiently great, the managerial ownership increases are associated with debt. This result establishes a link between firm value and leverage. That is why capital structure is used as a signalling device.

Financial leverage conveys management expectations about the firm's prospects. Naranayan (1988) finds that the use of debt perfectly distinguishes among firms of different quality in driving firms of inferior quality out of the market. It claims that debt, even risky, is more advantageous than outside equity because issuance of debt is less attractive to inferior firms. The use of debt as a barrier to entry in the market improves the average quality of the firms in the market, thus benefiting every market participant even when perfect discrimination is impossible. Debt financing can only be used by management if they perceive that the firm is undervalued. They will use equity if they perceive it is overvalued.

Another model using debt to discriminate entry to the market is that of Poitevin (1989), which involves potential competition between an incumbent firm and an entrant. At equilibrium low-cost entrants signal this fact by issuing debt while the incumbent and high-cost entrants issue only equity. The cost to a firm of issuing debt is that it makes the firm vulnerable to predation by another firm, which may result in bankruptcy of the debt-financed firm. The benefit of debt is that the financial market places a higher value on the debt-financed firm, because it believes such a firm to be low-cost. High-cost entrants will not issue debt since the resulting probability of

bankruptcy due to predation by the incumbent firms renders the cost of misleading the capital markets too high. The main result is that issuance of debt is good news to the financial market. Since predation is used only to drive one's rival into bankruptcy, there will be predation against debt-financed firms.

Debt is not the only signal to systematic risk in an industry, but managerial risk aversion also plays a significant role as a signalling device. This is consistent with Blazenko (1987), who finds that, with symmetric information, managers always use equity. The aversion of managers to debt results in their avoiding debt financing. The use of debt increases the total risk of share ownership. If managers' compensation is in part tied to equity performance and if managers are risk-averse, they prefer equity over the financial risk associated with debt. If managers know more about asset quality than investors, they signal high-quality firms with debt. Managers of low-quality firms have no incentive to misrepresent their firm by using debt since misrepresentation of the intrinsic value creates excessive risk.

The information asymmetry hypothesis is also affected by management's payoff. Ross (1977) suggests that the manager of a firm whose wages depend on current and future values of the firm will use debt to signal the quality of the firm. The dependence of the wage on the current value of the firm gives him the incentive to signal, while a penalty in the case of default dissuades him from overstating the value.

If the firm has a high quality project, management can increase its wealth by signalling with debt financing. Investors will interpret this action as implying a high quality project because they realise that management uses debt financing if the

probability of default is small. Thus, in Ross's model, firm value, debt level and bankruptcy probability are all positively related. This is because the increase in default penalty incites managers to decrease the debt level and the probability of bankruptcy.

In case of default, debt can serve as a disciplining device that allows bondholders the option to liquidate the firm and discipline management, and provides information useful for this purpose. In the model of Harris and Raviv (1991), the presence of debt in the capital structure generates information that can be used by investors to evaluate major operating decisions including liquidation. The informational consequences of debt are twofold. First, the ability of the firm to make its contractual payments to debt holders provides information. The market place interprets repayment behaviour as a signal about the firm's value and managerial reputation. Second, in default management must placate creditors to avoid liquidation, either through informal renegotiations or through formal bankruptcy. Creditors will use information about the firm's prospects to decide whether to liquidate the firm or continue current operations. It is contended that management is reluctant to liquidate the firm under any circumstance and is unwilling to provide detailed information to creditors that could result in such outcomes. Consequently, creditors will use debt to generate information about the intrinsic value of the firm. They will do so because their legal rights entitle them to force management to provide information and to implement the efficient liquidation decision.

For bondholders the necessity to implement an efficient liquidation decision involves costly investigation costs. This is because stockholders would not voluntarily liquidate the firm even if the liquidation value exceeds the going concern value. As discussed by Wruck (1990), when liquidation is the highest valued alternative, failing firms have

the incentive to overstate their value to induce bondholders to accept a restructuring and thereby preserve some option value for shareholders. The potential wealth transfer from bondholders associated with an overstatement of firm value will be greater when bondholders receive equity [Brown, James and Mooradian (1993)]. These authors show how the information problem can be resolved through the choice of securities offered in a debt restructuring.

When public debt holders are poorly informed about a firm's value, the firm can credibly convey information through the choice of securities offered to debtholders. The firm has an incentive to convey negative private information because public debtholders will accept a lower expected payoff in the exchange if the offer credibly reveals negative information. Firms with favourable private information will offer equity to bondholders to credibly convey this information and lower the bondholders' reservation price. However, if a firm with favourable private information offers a highly contingent claim, such as equity, the claim is undervalued by creditors. Therefore when the firm has favourable private information, it offers bondholders the least contingent claim possible, such as senior or secured debt, even in the absence of holdout problems.

This analysis is similar to Myers and Majluf's (1984) adverse selection problem with equity issues. Participation by well-informed, secured or senior bank lenders in a restructuring can mitigate adverse selection problems. In particular, banks and other private lenders are generally assumed to be better informed about the firm's prospects than public security holders [James (1987)]. Moreover, the potential conflict over the disposition of the firm's assets is likely to be greatest between stockholders and

secured bank creditors. Specifically, secured creditors will not exchange their debt for equity if liquidation is the highest valued use of the firm's assets. Thus bank actions can provide bondholders with reliable information about the value of the firm's assets as a going concern.

To preserve value and enhance value maximisation investment, in case of default, Zender (1991) suggests that ownership of control be transferred to the bondholders. This will attenuate the effect of asymmetric information on the investment opportunity and the efficiency of the decision making

### 2.3. Holdout problem.

One obstacle to recontracting financial claims is the difficulty of binding all bondholders to participate in a restructuring plan. Individually, each bondholder has an incentive not to forgive principal or exchange his claims if he or she believes other bondholders will make the concessions needed to return the firm to solvency. Firms that face holdout by a greater number of bondholders will have more difficulty restructuring their debt. In the extreme, they may fail altogether to recontract their claims and will have to liquidate [Roe (1987) and Gertner and Scharfstein (1991)]. Smith and Warner (1979) conjecture that private recontracting of claims will be easier when the debt is privately placed and owned to few lenders. On the other hand, having fewer bondholders could result in more frequent bargaining deadlocks. Smallness of numbers causes individual bondholders to feel more powerful and perceive greater Rand benefits to holding out. This situation may occur when there is heterogeneity of the firm's financial claims.

Firms with more complex capital structure are hypothesised to succeed less often at recontracting their claims privately. The more bondholders' claims differ in seniority rights, security, and other features, the more likely that their claims will be treated differently under any proposal of recontracting. As a result there may be greater disagreements over whether a recontracting plan is equitable in its treatment of different claims.

Financial recontracting should be easier for firms that initially owe most of their debt to commercial banks and insurance companies, as the claims of institutional lenders are generally senior and secured [Asquith, Gertner, and Scharfstein (1994)]. In addition, private debt (owed to institutional lenders) is restructured more easily than publicly traded debt.

However the acceptance by private lenders of restructuring may have an adverse information impact on the quality of the firm, unless concomitantly the firm offers equity to private lenders and senior debt to public bondholders [Brown, James and Mooradian (1993)]. Bank concessions and public debt reductions may be related even in the absence of information or holdout problems. James (1996) refers to this as the “share the pain’ hypothesis.

The recontracting of public and private debt depends largely on market environment. Rajan (1992) considers a model of private debt in an economy that contains both arm’s-length lenders and banks. In a bank-dominated economy, bank debt is easily renegotiated, because the bank is a monolithic, readily accessible creditor. In an arm’s-length economy, banks, like public bondholders, receive only public information. It makes it harder to contact these dispersed holders and any renegotiation suffers from information and free-rider problems.

**Summary of chapter 2.**

The chapter has made a survey of existing literature on impediments to financial recontracting. The theory of finance recognises that impediments to financial recontracting can stem from conflicts of interests among the firm claimholders, information asymmetry between poorly informed outside creditors and a better informed manager or insiders of the firm and holdout problem encountered when a firm debt is held by a large number of outside creditors.

In considering the agency costs of debt two types of conflicts of interests are identified: the manager-shareholder and the equityholder-bondholder conflicts. The agency costs of debt recognises that in case of default managers are always reluctant to relinquish control over the firm even if liquidating assets is the best alternative for shareholders. The agency costs of debt suggests that this conflict can be mitigated by the presence of risky debt in the capital structure. Debt in this case serves as a disciplining device to managers and forces them to provide information, thus reducing the information asymmetry between manager and shareholders. However, the agency cost of debt demands caution in liquidating assets that require job-specific skills and assets that are firm-specific. Job-specific assets can be sold to individuals who do not know how to manage them, forcing the buyer to hire a specialist to manage them. Assets that are firm-specific can be sold to firms in the industry that are credit-constrained, leading to the sale of assets below their value.

The agency cost of debt suggests that the equityholder-bondholder conflict can be mitigated in different ways. First the firm can be allowed to eliminate existing debt or

neutralise its effects before undertaking a new project. This can be done in the following ways:

- eliminating or shortening the maturity of debt;
- using callable debt to force bondholders to share in the residual value of the firm;
- using convertible debt to eliminate the risk incentive problem of debt and
- giving bondholders an equity claim.

Secondly the agency conflict can be mitigated by designing ex-ante debt contract. This can be achieved by the following methods:

- giving new debt sufficient seniority to equate their present and future expected cash flow;
- collateralisation of assets to substitute low risk project with high risk project;
- limiting the payment of dividend as a potential wealth transfer;
- using secured debt to alleviate the underinvestment problem;
- using leasing to alleviate the asset substitution problem and
- analysing the repayment history of the borrower to lower borrowing cost of debt.

Finally, the equityholder-bondholder conflicts of interests can be mitigated by renegotiating prior contracts of securities to resolve agency problems. Renegotiation is a bargaining game between securityholders, and this can be encouraged by:

- reducing conflicts between long-term and short-term lenders who are fully paid in case of liquidation of assets;
- making provision among equityholders and bondholders that the other party should buy out the other or find a third party to buy out the equityholder-bondholder claims.

The second impediment to financial recontracting is information asymmetry between investors. Information asymmetry serves to signal in two ways: financial and agency signalling. Financial signalling focuses on asymmetric information between insiders

and outsiders of the firm and conveys a signal about the quality of the firm. The proportion of management equity conveys information about the quality of the firm. The presence of risky debt is advantageous in signalling firm quality and driving competitors out of the market because levered firms are believed to be low cost or undervalued. The agency signalling approach suggests that debt repayment signals managerial reputation. In a bargaining process, management can offer bondholders equity to lower their reservation price. Management with favourable information offer the least contingent claim such as senior or secured debt. Participation of banks in a restructuring signals reliable symmetric information. The best way to attenuate the asymmetric information is to transfer ownership to bondholders.

The last impediment to financial recontracting is the holdout problem. Financial recontracting is easier when debt is privately placed or owed to few lenders. Being few in number, however, can cause individual bondholders to holdout in the presence of a complex capital structure. This can be also the case when the financial structure of a firm differs in seniority rights, security and other features. The recontracting of private debt may be affected by the legal and regulatory environment. In a bank-dominated economy, bank debt is easily renegotiated. In an arm's length economy, banks are like public bondholders in receiving public information, thus making it harder for dispersed bondholders to provide financial relief.

## Chapter 3 Development of Hypothesis and Methodology

### 3.1. Development of the hypothesis.

The resolution of corporate failure is not driven primarily by the impediments to financial contracting. The regulatory and legal environment affect investment behaviour and costs of financial failure. The legal environment determines the types of corporate ownership and control and their resulting conflicts of interests among claimholders of the firm's assets. The difference in regulatory environments defines the issue of shares with differential voting rights, the participation of institutional lenders in equity ownership and the establishment of particular organisational structure.

The legal environment affects also the degree to which a market participant can reduce the inherent principal-agent conflict between the stockholders and bondholders of the firm. Observed differences in market participants' investment patterns and corporate financial behaviour between the U.S.A and Japan suggest that regulatory environments that produce very diffused corporate structure are not appropriate to resolve the conflicts of interests of a firm's claimholders [Prowse (1990)]. In addition, Japanese firms with strong ties to institutional lenders or members of large industrial groupings reduce their costs of financial distress and are unlikely to go bankrupt [Suzuki and Wright (1985) and Hoshi, Kashyap and Sharsfstein (1990)].

In the light of these findings about the different effects of legal and regulatory environment in resolving corporate failure between the U.S.A and Japan, it seems

appropriate to explore how the South African legal and regulatory environment lessens the costs of financial failure, since South African companies share some features with their Japanese counterparts.

In South Africa, the legal and regulatory environments have produced a corporate landscape dominated by pyramid holding companies and multi-tiered diversified corporate groupings. These structures have effectively concentrated the control of most public companies in the hands of a few entrepreneurial families as well as institutional lenders. The ownership and control of the major South African corporations have been widely separated. This separation is not, however, between managers and shareholders as is generally the case for largely diffused ownership structure. The separation that occurs is between those shareholders with the majority of the claims to corporate cash flows and a minority of shareholders with sometimes minor proportionate claims to ownership but with effective control over the firm's operating assets.

The effective control by a minority of shareholders derives from the fact that the South African regulatory environment neither enforces nor encourages the principle of one share one vote as is the case in most regulatory environments where diffuse distribution of shareholdings necessarily implies a diffuse distribution of voting power. This, in turn, limits the incentive of shareholders to monitor and control management. The principle of proportionality of claims and control has been avoided by controlling shareholders in issuing shares without diluting their ownership claims, through a diversification of their portfolio into subsidiary operating companies. Thus,

a structure is created that is composed essentially of conglomerate companies with diverse interests, known as holding groups.

The practice of control by holding groups is not unique to controlling families, it applies also to major insurance companies. These companies are different in character because there are no founding families' interests, but the sheer size of the funds under management enables them to achieve the benefits of diversification and control without concomitant dilution of ownership. In addition, these groups have in their control banks and other financial institutions. Other groupings of smaller size are listed on the JSE. These groups compete with established groups.

The most important aspect of this structure is the relationship between financial institutions and other non group companies. The absence of restrictions on financial institutions' holding equity and debt in firms' financial claims gives this type of special creditor (contrary to other types of debt claims) the legal authority to watch over their financial claims more effectively than any other class of creditors by virtue of their control of voting rights attached to their shares.

This pattern of ownership structure may give rise to a more intensive use of leverage in South African companies. If financial institutions are permitted to be major shareholders, the agency costs of debt should reduce the incentive to engage in wealth transferring policies if they are also large debtholders of the firm.

The question on which this study focuses on is whether close financial links between group-affiliated companies and financial institutions allow firms to go into bankruptcy

when it is economic to liquidate them, that is, when the economic value of the firm is less than its break up value.

South African group financing arrangements can moderate the costs of financial failure. These costs can be lessened in several ways. First, because there are controlling shareholders, probably a financial institution belonging to the group structure, and thus fewer creditors, free-rider problems are less severe. It is very difficult to negotiate with a large number of creditors and reach an agreement with all of them simultaneously. Holdout creditors can free ride on others. As discussed by Myers (1977), Bulow and Shoven (1978) and Gertner and Scharfstein (1990), difficulties in negotiating with creditors may lead to underinvestment and inefficient liquidation. Even if the firm has valuable investment opportunities, an individual bondholder may be reluctant to finance them because part of the greater future cash flows accrue to the holdout bondholders. Similarly, if it is efficient for bondholders collectively to write down their debt claims, a sole bondholder may be unwilling to do so because he bears all the cost and receives only part of the benefit.

Second, the less restrictive regulations on equity investments by large financial institutions lessen the information asymmetry to them; they are what Jensen (1989a,b) defines as active investors with some control over firm policy. The main institutional lenders are probably well informed about the financial position of the firm and its prospects. The problem in obtaining credit because of information asymmetry is therefore reduced.

Bolton and Scharfstein (1989) present a model in which financial failure leads to inefficient liquidation even though there is only one creditor. It is very difficult to raise capital from one creditor. Even, in the presence of numerous creditors, it is difficult to agree to a financial restructuring that promotes investment and avoids inefficient liquidation. Gertner (1989) presents a model where information asymmetry, in the presence of more than two parties, leads to bargaining and inefficient liquidation.

Finally, there are numerous direct and indirect financial links between suppliers, customers, and failing firms. Suppliers, customers and workers have implicit claims on the firm's assets. Group affiliation makes suppliers more willing to extend trade credit and invest in long-term supply relationship. Customers become more willing to buy from the firm and workers to provide their services. This shows the existence of more subtle forms of credit that are difficult to obtain when a firm is in financial failure. Suppliers may be unwilling to extend trade credit when it is not clear whether a firm will remain in business. Product market competitors may compete aggressively to convince trade creditors that it is unprofitable for the firm to remain in business.

[Bolton and Scharfstein (1989)]. Moreover, consumers deciding whether to buy a durable item must decide whether the firm will be able to meet its implicit and explicit warranties [Titman (1984)].

Workers' productivity and confidence can be affected because a failing firm no longer provides job security to employees. Cornell and Shapiro (1987) analyse the difficulty of holding implicit claims. For example an employee receives an implicit claim from the firm that his employment will not be terminated. Except under extraordinary

circumstances the employee can neither market that claim nor buy similar implicit claims from other firms to protect him in case the firm does default.

Group affiliation and financial institution links may be sufficient to overcome some of the problems associated with financial failure, but are by no means necessary. There are firms that do not belong to a group structure but have very strong ties to a single institutional lender. Such firms may not receive support from other affiliated firms, but in theory they should receive help from closely affiliated financial institutions

In the light of evidence presented by Suzuki and Wright (1985) in identifying a set of Japanese firms that filed for bankruptcy, liquidation or reorganisation, it was concluded that group firms or firms with close ties to banks are more likely to be given interest or principal concessions by creditors. This suggests that concentration of financial claims or control by a minority of shareholders enables the firm to avoid bankruptcy and yet still resolve financial failure. Franks and Torous (1989) and Gilson, John and Lang (1990), examined some aspects of reorganisation of failing firms. They also find that (i) less solvent and less liquid firms entering bankruptcy consequently write down creditors' claims in comparison to private workouts, and (ii) deviations from the rules of strict priority are larger in workouts. Deviations from absolute priority rule may be viewed as an ex post change in the priority of creditors. Because of more complex, lengthy and costly bankruptcy proceedings, creditors may have an incentive to purchase, prior to expiration, the shareholders' option to remain in reorganisation. The purchase takes the form of writing down creditors' claims and writing up those of shareholders, thereby giving rise to deviations from absolute priority.

A general view of financial failure is that it results from a mismatch between the currently available liquid assets of a firm and its current obligations under its debt contracts. Mechanisms for dealing with financial failure rectify the mismatch by either restructuring the financing assets or restructuring financing contracts, or both.

Financial failure has important implications for the liquidity and leverage policies of a firm. In particular, when the costs of financial failure are high, the firm may maintain a larger fraction of its assets and/ or be cautious in taking on debt, thus affecting the corporate liquidity policy, and the leverage policy of a firm. The loss of value will be greater for intangible assets and assets that generate firm specific rents: these are growth opportunity, managerial firm specific human capital, monopoly power, and operating synergies whose value depends on the firm's assets being kept together. Financial failure will be costly for firms whose assets are more intangible or firm-specific.

This view is consistent with the findings of Gilson, John and Lang (1990), whose analysis of US firms showed that firms that rely more on bank financing than on bond financing are more likely to restructure their claims outside the bankruptcy courts. Their study shows that asset and financial characteristics jointly determine the choice between informal and formal reorganisation mechanisms. More specifically, financial failure is more likely to be resolved through private workouts when (i) a greater proportion of the firm's assets are intangible, (ii) a greater proportion of its debt is bank debt, and (iii) the firm has fewer lenders (fewer distinct classes of debt outstanding).

The economic reasoning underlying these findings is as follows. On the asset side, intangible assets proxy for the destruction of going concern value which would occur if financial restructuring fails and asset restructuring is required. The going concern value that is saved if the firm maintains operations through a workout is higher, the higher the proportion of intangible assets. The greater the proportion of bank debt and concentration of creditors the greater the probability that a settlement will be reached in the bargaining process, leading to a successful workout.

An empirical model on resolving financial failure uses the ratio of a firm's market value to the replacement costs of its assets, designated as Tobin's  $q$ . The ratio is used as a proxy for the loss of going concern value due to assets sales [Lindenberg and Ross (1981)]. Replacement costs approximate what the firm's assets could be sold for piecemeal, and are positively correlated with the liquidation value of the assets. Firms with a higher market value/ replacement cost will have higher costs of assets liquidation [Alderson and Betker (1995)].

### **3.2. Hypothesis.**

From the analysis developed in section 3.1, the hypothesis is that firms with a higher market value/ replacement cost will be more likely to recontract their financial claims privately and preserve the going-concern value in assets sales and premature liquidations than firms with a lower Tobin's  $q$ .

Formally stated, the null hypothesis is:

Ho: There is no difference in the resolution of failing companies.

The following supplementary hypotheses attempt to analyse the patterns for reorganisation of failing firms.

h1: Larger firms compared by their book value of assets are likely to recontract easily because the larger the firm the lower its probability of liquidation.

h2: Firms that experience a substantial decline in cash flow performance and liquidity are likely to take actions that generate short-term cash flow. They also likely to recontract quickly to preserve their going concern value

h3: Firms that are highly levered are likely to recontract their claims because leverage acts as a catalyst for organisational change.

h4: Firms that are likely to recontract their claims are firms that invest, short-term, more fixed assets that can be pledged in a liquidation, and using more collateral, thus reducing the likelihood of liquidation.

h5: Firm that are likely to restructure their claims are likely to have more short-term debt that matures in less than year because short-term debt acts as an overhang.

h6: Firms that are likely to restructure easily are given a going-concern certificate by an increase in ownership structure of inside and outside claims.

### **3.3. Research methodology.**

#### **3.3.1. Sample selection.**

The choice of sample depends on how financial failure is defined. Among the many possible definitions of financial failure, a firm is considered to enter into financial failure when its listing is suspended or terminated at the Johannesburg Stock Exchange. For that purpose, the requirement is that the firm be listed on the Johannesburg Stock Exchange at the onset of financial failure. The sample is restricted to delisted companies that appeared in the December J.S.E monthly bulletin, during years 1986 to 1996. The bulletin contains all historical information on companies that were once or are still listed on the Johannesburg Stock Exchange.

This study uses a two-step sampling procedure. The definition used to qualify a company as a successful restructuring or unsuccessful is the following: A suspended or delisted company that is reinstated on the Stock Exchange is defined as a successful restructuring. It is a sign of going concern qualification by different claimants of the firm's assets. The reinstatement serves to submit a company to the discipline of the market. Contrary to a successful restructuring, a firm is considered an unsuccessful restructuring when it is delisted before or after an attempt to restructure its financial claims. The failure to be reinstated to the stock market is a no-confidence vote for a firm as a going-concern. Therefore, the unsuccessful debt restructuring cannot submit the firm to the competition and discipline of the market.

This study analyses a sample of 60 exchange-listed companies that were at one time in their history delisted during the period of 1986-1996; 28 firms were only once delisted and were reinstated and 32 were delisted following an attempted debt restructuring ( see Table 1).

Table1: Sample description by year of delisting

Year	successful restructuring	unsuccessful restructuring
1986	3	-
1987	1	1
1988	2	-
1989	3	1
1990	6	3
1991	2	4
1992	2	6
1993	5	5
1994	3	5
1995	1	3
1996	-	4
Total	28	32

This sampling method has three advantages. First, it excludes firms that were reinstated but delisted again after a number of years. These firms are excluded because they no longer meet the requirements of successful restructuring. This stricter selection rule left the sample with 28 firms out of 52 firms that were at one time in their history suspended and reinstated. The method also allows one to track firms at the start of their troubles. This will avoid the inclusion in the sample of firms that are probably failing structurally because of industry distress. This applies particularly to firms that belong to the electronic, electrical and battery; clothing, footwear and

textiles; building and construction; furniture and household and retail and wholesale sectors. The sectors represented in the sample are shown in Table 2. Another advantage is that the sample excludes highly leveraged but profitable firms that may wish to amend certain terms in their debt contract to enable them to invest in net present value project. Based on historical information, it also excludes firms that were targets of takeover attempts or a merger and acquisition at the Johannesburg Stock Exchange

Table 2: Sample description by sector

Sector	Number	Sector	Number
Banks, financial services	4	Gold, rand and others	5
Beverages and hotels	1	Industrial holding	3
Building and construction	1	Mining financial	1
Clothing, foot and textiles	3	Other metals	1
Curtailed operations	1	Paper, packaging	2
Development capital	5	Pharmaceutical, medical	1
Electronic, electrical	3	Printing and publishing	1
Engineering	8	Property	2
Financial insurance	1	Retail and wholesale	4
Financial investment	1	Stores	6
Furniture	3	Transportation	3

### 3.3.2. Measures.

The measure used to identify the going concern value is the Tobin's q ratio, defined as the ratio of the market value of assets to the current replacement cost of assets. The numerator includes all the firm's debt and equity securities, not just its common stock. It represents the market value of a firm. The denominator approximates what the firm's assets could be sold for piecemeal, and is positively related to the liquidation value of the asset. The study uses the formula suggested by Brealey and Myers (1996) to calculate the Tobin's q.

Tobin's q = Market value of assets / Estimated replacement cost

The estimated replacement cost of assets is the total book assets minus the book value of plant, equipment and inventories. The book value of plant and equipment is an inflation-adjusted value because inflation drives the value of plant and equipment well above their original cost. The book value of inventories remains the same because the general accounting practice in South Africa use the First In First Out (FIFO) method in stock evaluation. This stock valuation method is less influenced by the inflation rate than other methods.

Because the market values of a highly levered firm tend to be extremely volatile, a three year average of the market value/ replacement cost is used in the empirical analysis as in Gilson et al (1990). The bank debt ratio is defined as the book value of debt owed to banks divided by the book value of short-term liabilities. This measure is different from that used by Gilson et al (1990), where the bank ratio is defined as the book value of debt owed to banks divided by the book value of total liabilities.

Another proxy variable used as an explanatory variable between successful and unsuccessful restructuring is the ratio of creditors to short term debt. The study of Gilson and al (1990) uses the number of debt contracts outstanding, because public disclosure requirements are such that short-term debt ownership cannot be identified reliably. As an alternative, this study uses the number of creditors as a proxy variable for free-rider problems and informational asymmetries. This measure can provide a relative weight of creditors' stake in financial restructuring of failing firms.

The bank and creditors short-term ratio used in the study are averaged for three years. Averaging helps to mitigate problems of random fluctuations. Using past firm characteristics helps to reflect past firm policies.

The maturity of debt proxy variables are calculated by the book value of long-term debt (debt that matures over a period of more than one year) and short-term debt (debt that matures over a period of less than one year) to total debt. These ratios provide an indication of debt maturity across the sample.

Because of the group-dominant corporate structure in South Africa, a failing firm is particularly affected by the direct and indirect financial links with other group members. The study analyses change that occurs in shareholdings. The variables used are directors' interest and minority interest to assess the change in equity holdings. The directors' interest represents the interest of equity holding held by insiders in the firm. The minority interest represents the interest of ordinary shareholders who do not sit on the board of directors, or outside shareholders.

Indication that a firm's performance is in decline is provided by analysing the firm's cash flow for a period of three years. The measures used are the changes in earnings before interests and taxes (Ebit) and the average Ebit to total assets ratios. These cash flow measures can provide an indication of a decline of firm's performance preceding a suspension or delisting on the Johannesburg Stock Exchange.

### **3.3.3. Data sources.**

Because of the difficulty of finding data on delisted companies on the J.S.E starting from the year of delisting, various sources had to be consulted to generate information for this empirical analysis. These include financial statements of companies, Mc Gregor's Who Owns Whom and the Bureau of Financial Analysis database.

### **3.2.4. Statistics.**

The study tests for a difference between two population means. The study assumes that the sample is normally distributed, and the sampling distribution of the mean is precisely distributed. However the standard distribution of the sample is unknown, the appropriate confidence interval estimation of the sample is the T test.

### 3.2.5 Limitations.

The use of the ratio of bank debt divided by the book value of short-term liabilities is due to the limitation imposed by the method of data collection which precludes the study from identifying the long-term debt owed to banks and other financial institutions. As an alternative, the present study uses the bank debt and overdraft that appear under the current liabilities. This is particular for most South African companies' balance sheets that consider bank overdraft as part of the borrowings. The effect of this data limitation on the analysis is not clear because it is unclear what the empirical distinction between short-term and long-term debt should be.

The one year demarcation between short-term and long-term debt used for accounting purposes does not necessarily correspond well with the distinction between short-term and long-term debt in theoretical models. In most models, the definition of short-term and long-term debt depends on the life of the project the debt is financing, which probably varies significantly across firms and may extend well past one year. In addition, the effective maturity of long-term debt is ambiguous. Debt contracts often contain clauses that convert long-term debt into short-term should the need arise. More complex is the fact that firms can continually roll over commercial paper, which is technically short-term debt, and classify it as long-term debt.

**Summary of chapter 3.**

The chapter analyses impediments to financial recontracting, leading to the formulation of the hypothesis. The formulation of the hypothesis is done with regard to a particular contractual relationship that dominates the South African legal and regulatory environments. South African companies listed on the Johannesburg Stock Exchange are dominated by a pyramid structure which is controlled by a minority of shareholders with effective control over the assets. This particular control may lessen the monitoring costs. In addition, the absence of restriction of financial institutions from holding equity and debt may lessen the information asymmetry and free-rider problem.

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## **Chapter 4 Resolution of Corporate Failure at the J.S.E.**

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### **Introduction**

The chapter analyses the resolution of corporate failure on the Johannesburg Stock Exchange (JSE). The sample contains firms that were delisted between 1986 and 1996. Firms that were delisted and re-instated after a successful restructuring of their financial claims number 28 and constitute the sample for successful firms. Firms that were delisted on the JSE following an unsuccessful debt restructuring number 32 and constitute the sample for unsuccessful restructuring.

Empirical studies predict how firms can successfully restructure their financial claims at the onset of financial failure [Gilson et al (1990)]. Assets and financial characteristics jointly determine the success of restructuring financial claims in the reorganisation plan of a firm. More specifically financial failure is more likely to be resolved through a private workout when a greater proportion of the firm's assets are intangible. Intangibles assets proxy for the destruction of going-concern value which would occur if financial recontracting fails and assets restructuring is required. This characteristic of assets hypothesise that when more assets are intangibles they are likely to be destroyed in an unsuccessful recontracting. Financial characteristics that hypothesise financial recontracting are bank debt and the number of creditors. The greater the proportion of debt that is private debt and the concentration of the number

of creditors, the greater the probability that a settlement on financial restructuring will be reached in the bargaining process, leading to a successful restructuring.

**Table 3:** Descriptive statistics of assets and financial characteristics that hypothesise successful restructuring for firms that restructured their claims on the Johannesburg Stock Exchange after a delisting period and were re-instated and firms that were delisted after an unsuccessful debt restructuring.

	<u>Successful restructuring</u>				<u>Unsuccessful restructuring</u>				P value
	Mean	Median	Min	Max	Mean	Median	Min	Max	
Market/ Replacement cost ratio	1.9	1.18	.047	10.1	1.0	.7	.025	4	.045297
Bank debt	.3	.35	.0007	.9	5	.4	.069	2	.200391
Number of creditors	2.5	2	1	6	3.1	3	1	6	.204804

Table 3 presents selected characteristics of firms whether or not they successfully recontracted their claims. Firms that recontract their claims have a higher market value/ replacement cost ratio. Their mean and median are superior to the mean and median of unsuccessful firms, and the difference in mean is statistically significant at a p level of 0.045297. This is consistent with the theory that hypothesises that firms with more intangible assets are more likely to be restructured and preserve their going-concern value.

The ratio of bank debt shows that unsuccessful firms have higher mean and median values than successful firms. This is not consistent with the theory that hypothesises that firms with more bank debt are likely to obtain a debt relief and continue their operations. The difference in mean for the bank debt ratio is not statistically significant, at a p level of 0.200391 to conclude that the theory does not hold.

The number of creditors is lower for successful firms compared to the mean and median of unsuccessful firms. Their difference in mean is not statistically significant at a p level of 0.204892. However, the theory suggests that the fewer the number of creditors the less the holdout problem.

The following sections analyse the test of the hypothesis for financial restructuring in depth. Section 4.1 analyses the market value/ estimated replacement cost ratio. Section 4.2 presents results on the bank debt ratio. The last section analyses the number of creditors.

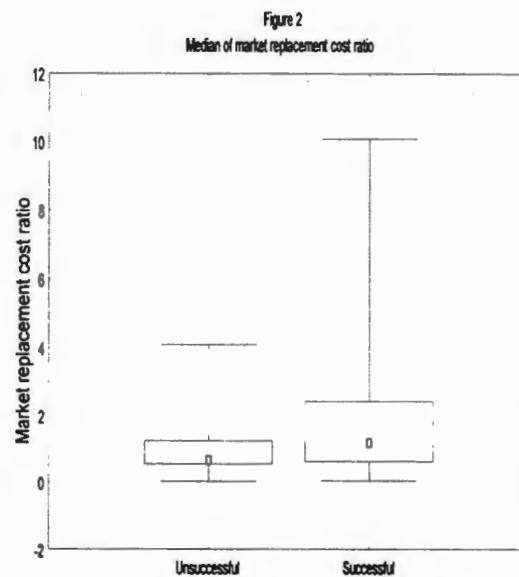
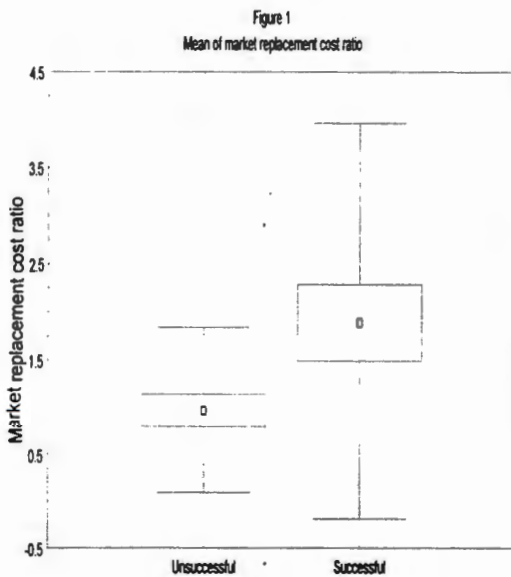
#### 4.1. Market value/ replacement cost ratio

The ratio of market to replacement cost, defined as Tobin's  $q$ , is used as a proxy for the loss of going-concern value due to assets sale and premature liquidation associated with financial failure. Replacement cost approximates what the firm's assets could realise if sold piecemeal, and is generally positively correlated with the liquidation value of assets. Sheifler and Vishny (1992) and Titman and Wessel (1988) argued that the costs of liquidation are higher for firms that produce unique or specialised products. Tobin's  $q$  measures the quality for firms with intangible assets and assets that generate firm-specific rents. These are growth opportunities, management specific human capital, monopoly power, and operating synergies whose value depends on the firm's assets being kept together. Financial failure can easily destroy a firm's assets and it may be more costly for firms with intangible assets and assets that generate firm-specific rents. Intangible assets and assets that generate firm-specific rents are typically traded in secondary markets, and represent discretionary future investment cost [Myers (1977)]. Liquidation costs are the costs incurred when assets are sold to raise cash and remedy financial failure [Brown, James and Mooradian (1992), Asquith, Gertner and Scharfstein (1991), Lang, Poulsen and Stulz (1995) and Ofek (1993)]. Tobin's  $q$  also measures the quality of a firm's current and anticipated projects under existing management.

## Sample results

**Table 4:** Summary statistics for the ratio of market value to the replacement cost for successful and unsuccessful firm.

	Successful	Unsuccessful
Count	27	25
Mean	1.9	1.0
Median	1.18	.7
Standard error	.40	.2
Standard deviation	2.1	1.
Quartile Range	1.8	.7
Lower quartile	.615	.54
Upper quartile	2.4	1.2
T stat	-2.05326	
P value	.045297	



The analysis of the ratio of market value to the replacement cost of assets reveals that the differences both in mean and median of successful firms are higher than those of unsuccessful firms. The mean and median of successful firms are 1.9 and 1.18. The lower quartile is 0.615 and the upper quartile is 2.4. The mean and the median of unsuccessful firms are 1.0 and 0.7. The lower quartile is 0.54 and the upper quartile is 1.2. The T statistic is higher and negative and the difference in mean is statistically

significant at a p level of 0.045297. This result is consistent with the hypothesis developed in chapter 3 that firms with market value higher than the replacement cost of assets find delisting more costly than a private recontracting. This result is consistent with the views of Sheifler and Vishny (1992) and Titman and Wessel (1988) that the costs of liquidation are higher for firms with more intangible assets and assets that generates firm-specific rent.

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## 4.2 Bank short-term debt ratio

Different factors affect firm reliance on bank borrowing. Those factors can generally be classified as focusing on one of the three primary concerns: the costs of monitoring and collecting information about firm borrowers, the likelihood and costs of inefficient liquidation, and the incentives to take actions harmful to lenders.

Factors based on monitoring and information costs suggest that bank lending is especially important in overcoming adverse selection and moral hazard problems. Fama (1985), Smith and Warner (1979) find that smaller firms and firms with a higher proportion of intangible assets are expected to rely primarily on bank financing. Barclay and Smith (1995) put forward a similar argument concerning a firm's reliance on short-term bank borrowing. Nakamura (1993) finds that small firms lower their information and monitoring costs by borrowing from banks that can collect comprehensive information from their transaction accounts. Large firms find bank loans less advantageous because most of their transactions accounts are spread over a great number of banks. In addition, Yosha (1995) argues that the high disclosure of public debt may lead firms to yield sensitive information to rival firms. Private debt avoids the high disclosure, but still evokes competitive responses from rival firms who think the borrowers concealing information about high quality projects. Thus, Yosha predicts that firms with high quality projects avoid public debt because it has two costs: the high cost of information disclosure and the cost of competitive responses by rival firms when they learn the borrower has high quality projects.

Houston and James (1996) find that the relationship between bank borrowing and the importance of growth opportunities depends on the number of banks the firm uses and whether a firm has public debt outstanding. For firms with a single bank relationship, the reliance on bank debt is negatively related to the importance of growth opportunities. In contrast, among firms borrowing from multiple banks, the relationship is positive.

Factors based on the efficiency of liquidation decisions focus on bank debt covenants. Berlin and Loeys (1988) find that the optimal debt choice trades off inefficient liquidation caused by harsh covenants against the agency costs of delegating monitoring to a bank that can conduct detailed investigations to help avoid these inefficiencies. In a related model, Berlin and Mester (1992) argue that while restrictive covenants protect lenders and thus allow lower interest rates, they can also interfere with optimal investment. Private debt can have harsher covenants than public debt because it is more easily renegotiated when covenants interfere with investments. According to Chemmanur and Fulghieri (1994), bank debt is attractive because it can be easily renegotiated for good firms when necessary to avoid inefficient liquidation. Firms with a greater likelihood of financial distress place greater value on renegotiability even though bank debt is expensive.

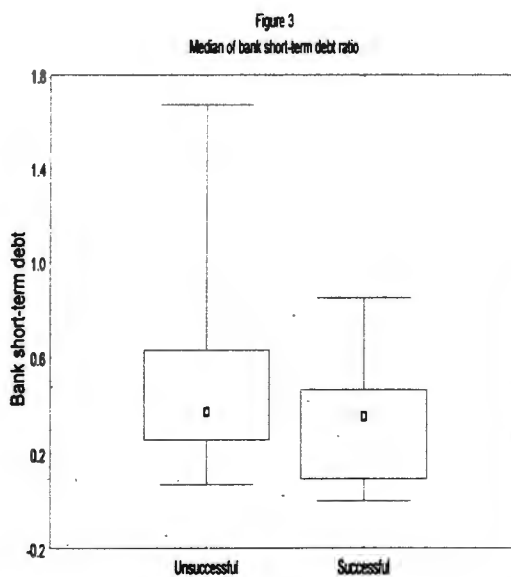
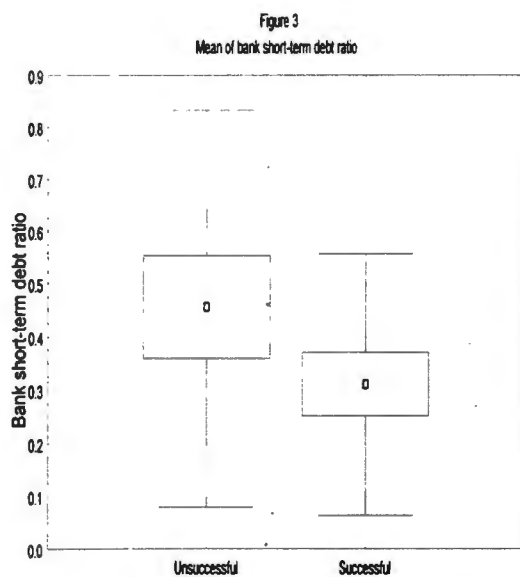
Models based on borrower's incentives focus on reputation. According to Hoshi, Kashyap, and Scharfstein (1993), banks monitor managers to discourage unprofitable investment. Similarly, Diamond (1991a) suggests that firms borrow and repay monitored bank loans until sufficient history of non-default is established. Rajan (1992) predicts that the preference for bank debt is related to a borrower's bargaining

power with lenders. He suggests that empirical proxies for bargaining power might be the degree of control banks have over a borrower's suppliers or the degree of the bank's equity ownership of the borrower, neither of which are not publicly available.

### Sample results

**Table 5:** Summary statistics for the ratio of bank short-term debt to total debt for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	18	15
Mean	.3	.5
Median	.29	.4
Standard Error	.059	.097
Standard deviation	.3	.37
Quartile Range	.4	.4
Lower quartile	.074	.26
Upper quartile	.5	.6
T stat	1.3092	
P value	.200391	



Results in Table 5 reveal that successful firms have lower mean and median values than unsuccessful firms. The mean of bank short-term debt for successful firms is 0.3

and the median 0.29. Unsuccessful firms have a mean of 0.5 and a median of 0.4. The lower quartile value is 0.074 for successful firms and 0.26 for unsuccessful firms. Successful and unsuccessful firms present the same level of upper quartile value of 0.4. Results in Table 5 are not consistent with most of the theoretical models developed earlier, in chapter 3 and section 4.2. In chapter five, the study finds that successful firms are smaller by size measured by the book value of assets. This indicates that results of section 4.2 are in contradiction with the prediction of Smith and Warner (1979) that smaller firms with a high proportion of intangible assets should rely primarily on bank financing. The model of Nakamura (1993) suggests that small firms can lower their information and monitoring costs by borrowing from banks. Yosha (1995) predicts that firms with high quality projects can rely on bank debt to avoid high disclosure of information associated with public debt and the spreading of sensitive information to rival firms. In addition, these results are in contrary to the prediction of with Chemmanur and Fulghieri (1994) that bank debt is associated with renegotiation for good firms to avoid inefficient liquidation.

### 4.3 Number of creditors

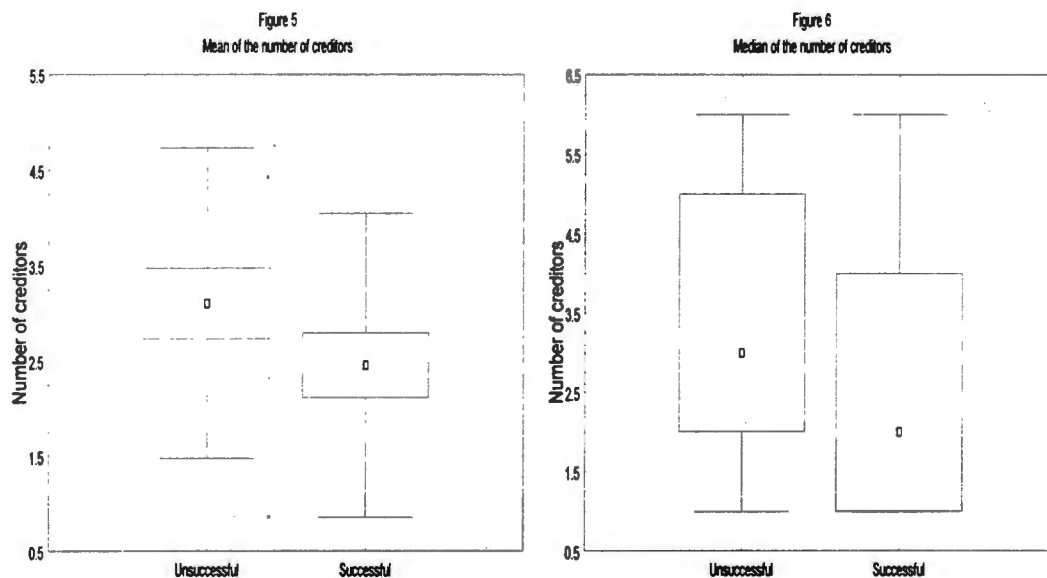
Financial recontracting is difficult for firms that are likely to have significant conflicts among its creditors arising from the free-rider problem and information asymmetry. Bulow and Shoven (1978) and Gertner and Scharfstein (1990) point out that a free-rider problem reduces the incentive for creditors to grant financial relief or extend credit. When there are many creditors in a recontracting process, it is very difficult to renegotiate with all of them and this difficulty may lead to underinvestment and inefficient liquidation. Even if the firm has valuable investment opportunities, an individual creditor may be reluctant to finance them because part of the greater future cash flows will accrue to the holdout creditors. Similarly, even if it is inefficient for creditors to write down debt, a sole creditor may be unwilling to do so because he bears all the cost and receives only part of the benefit.

Moreover, when debt is diffusely held, creditors are not likely to be well informed about the firm and may not know whether to provide new capital or interests and principal concession. In this case, it is difficult to raise capital from one creditor, let alone get numerous creditors to agree to a financial recontracting that promotes investment and avoids inefficient liquidation. There are also more subtle forms of credit such as credit with customers and suppliers that are more difficult to obtain when a firm is in financial failure.

## Sample results

**Table 6:** Summary statistics for the number of financial creditors for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	22	20
Mean	2.5	3.0
Median	2.0	3.0
Standard Error	.3402	.37381
Standard deviation	1.6	2.
Quartile Range	3.0	3.0
Lower quartile	1.0	1.5
Upper quartile	4.0	4.5
T stat	.96525	
P value	.204804	



Results in Table 6 reveal that successful firms have lower mean and median number of creditors. The mean number of creditor is 2.5 and the median is 2.0 for successful firms. Unsuccessful firms have a mean number of creditors of 3.0 and a median number of creditors 3.0. The lower quartile number of creditors is 1.0 for successful firms and 1.5 for unsuccessful firms. The upper quartile number of creditors is 4.0 for

successful firms and 4.5 for unsuccessful firms. These results are consistent with the predictions of Myers (1977), Bulow and Shoven (1978) and Gertner et al (1990) on free-rider problem and information asymmetry. However, the difference in mean between the sub-samples is not statistically significant at p level of 0.204804 to conclude that the hypothesis developed in chapter 3 has been validated.

#### **Summary of chapter 4.**

The chapter analyses the mechanisms of financial restructuring. The hypothesis developed in chapter 3 hypothesises that assets and financial restructuring jointly determine the mechanisms of financial restructuring. The study finds that assets characteristics, that is the ratio of market value to the estimated replacement cost of assets, is higher and statistically significant. This result is consistent with the views of Titman and Wessels(1988), Scheifler and Vishny (1992), Jensen (1989a,b) and Gilson et al (1990) that firms with more intangible assets restructure their claims more easily to preserve their going-concern value.

The study finds that firms with more intangible assets have less bank debt and fewer creditors. The bank short-term debt ratio is in contradiction with most theoretical models that associate private debt as proxy variable for successful debt restructuring. Chenmanur and Fulghieri (1994) suggest that bank debt is associated with renegotiation for good firms to avoid inefficient liquidation. Yosha (1995) predicts that firm with high quality project will use bank debt. This result is contrary to the prediction of Nakamura (1995) that links size with information and monitoring costs, suggesting that small firms should rely on bank debt ( see chapter 5).

The study finds that successful firms have fewer creditors than unsuccessful firms. The result is consistent with the predictions of Myers (1977), Bulow and Shoven (1978) and Gertner et al (1990) on free-rider problem and information asymmetry.

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## Chapter 5 Sample Assets Characteristics

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### Introduction.

The chapter describes the characteristics of selected firms. One of these characteristics is the size of the sample measured by the book value of assets. The size of the firm is linked to bargaining complexity, choice of security sources credit risk and monitoring and information costs. The second assets characteristic is cash flow liquidity measured by the ratio of current assets to current liabilities or current ratio. Cash flow liquidity provides a measure of liquid funds in excess of current obligation that is available as a margin of uncertainty to which flow of funds may be subject. Cash flow performance characteristic is measured by three variables. The first and second variables of cash flow performance are measured by the change in Ebit to total assets in the pre-distress year and during the base year. The third measure of cash flow performance is an average three year ratio of Ebit to total assets. These measures attempt to monitor earnings performance of the sample. The recontracting period measures the time spent in reorganisation after a suspension or delisting on the Johannesburg Stock Exchange.

**Table 7:** Selected firms and sample characteristics for firms that successfully restructured their claims and were re-instated on the Johannesburg Stock Exchange, and firms that were delisted after a debt restructuring.

Characteristic	<u>Successful restructuring</u>				<u>Unsuccessful restructuring</u>				P value
	Mean	Median	Min	Max	Mean	Median	Min	Max	
1. Size									
Book value of Assets (000)	111333.8	27674	1421	906157.7	490607.9	137743	4664	4110088	.065693
2. Cash flow liquidity									
Current ratio	3.5	1.63	1.53	29.5	1.9	1.4	.111	10	.204601
3. Cash flow performance									
Change in Ebit/ Total assets	-.3	-.6	-1.401	2.8	-.7	.019	-13.695	9	.736948
Change in Ebit base year	.021	-.19	-2.237	2.7	-.4	.1	-8.778	2	.518985
Change in Ebit distress year	-.5	-.78	-2.595	3.5	-.3	.2	-42.647	20	.917468
4.Recontracting period(months)	7.6	7.0	.03	24	5.1	.03	.03	30	.248972

The results in Table 7 indicate that firms that successfully restructure their claims have a small book value of assets. The difference in means is significant at a p level of 0.065693. This result is contrary to most theories which predict that large firms succeed in restructuring their debt.

An analysis of cash flow liquidity shows that the mean of the current ratio for successful firms is higher. The difference in median also indicates that the median of

the current ratio for successful firms is marginally higher for successful firms. The difference in mean is not, however, statistically significant at a p level of 0.05 to conclude any difference in current ratio for the sub sample. Both successful and unsuccessful firms performed poorly three years before delisting on the Johannesburg Stock Exchange. The average ratio of Ebit to total assets for that period indicates that the means of both successful and unsuccessful firms are negative. It is indicated that the median value of the ratio of Ebit to total assets is marginally higher than zero for unsuccessful firms. Analysis of cash flow performance in base and distress years shows that the cash flow performance of successful firms went from bad, in base year, to worse in distress year. The mean of the ratio of change in Ebit to total assets is positive and marginally higher than zero for successful firms. The median is negative for successful firms. The opposite applies to unsuccessful firms where the mean is negative and the median positive in base year. The results in distress year indicate that both the mean and median are negative and lower for successful firms. However, unsuccessful firms with a negative mean have a positive median value, marginally higher than zero. Results obtained from the different ratios of cash flow performance are not statistically significant to indicate any difference in sub-sample performance.

An analysis of the recontracting period shows that both the mean and the median are higher for successful firms than for unsuccessful firms. They both have the same minimum period of recontracting. However, the maximum period of recontracting is higher for unsuccessful firms. The difference in mean for the recontracting period between successful and unsuccessful firms is not statistically significant to conclude that there is a difference in recontracting time required by successful and unsuccessful firms.

### 5.1. Size.

A number of authors have suggested that leverage and other firm characteristics may be related to size. Warner (1970) and Ang, Chua, and Mc Connell (1982) provide evidence that large firms tend to be more diversified and less prone to financial failure. The underlying reason is that all else being equal, the larger the firm the greater its potential to diversify its non-systematic risk, thereby making its bond less risky.

The size of the firm is also linked to bargaining complexity. Weiss (1990) suggests that equity deviation in formal reorganisation is positively related to the size of the distressed firms. In this case, the size of the firm is an important determinant in equity deviation because it is correlated with bargaining complexity. Large size implies that on average more parties are involved in negotiation, making it more difficult for creditors to form workable coalitions resulting in larger equity deviation.

In addition, the size of a firm is linked to the choice of security sources. Smith (1977) finds that small firms pay much more than large firms to issue new equity and long term debt. This suggests that small firms may be more leveraged and may prefer to borrow short term, through bank loans, rather than issue long-term debt because of lower fixed costs associated with this alternative. Smith's arguments are consistent with the monitoring and information costs hypothesis. Fama (1985) argues that large firms find it more economical to produce the information required for public securities, and thus borrow publicly rather than rely on bank debt or private debt. The

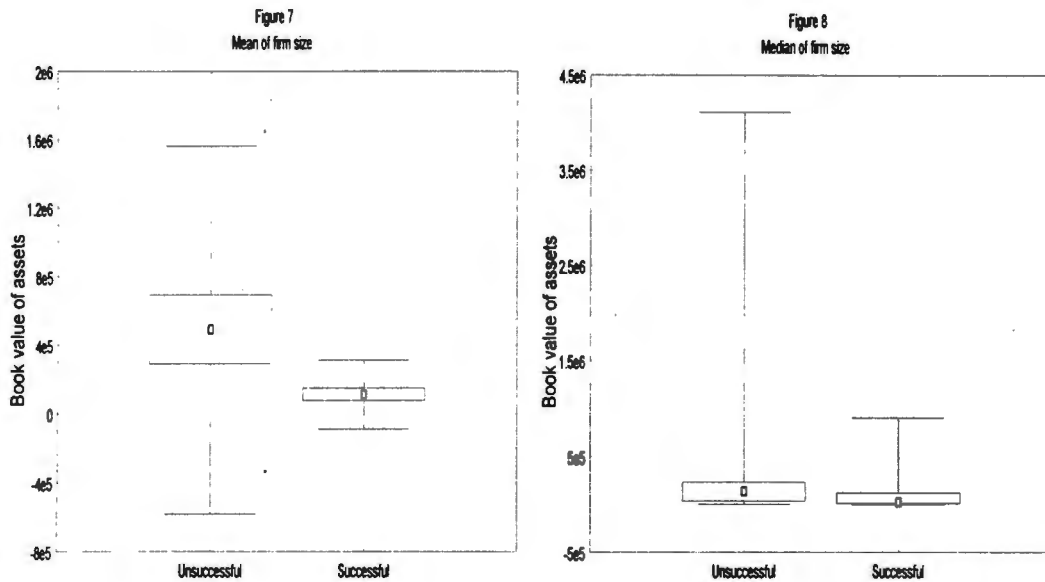
same line of reasoning is consistent with Nakamura's (1993) argument that bank borrowing is less beneficial for larger firms because their transactions accounts spread over a greater number of banks than small firms' accounts, and thus provide less useful information. Information cost is also associated with high quality projects. Yosha (1995) finds that firms with high quality projects prefer to avoid the high costs of information disclosure associated with public debt.

Models based on the efficiency of liquidation decisions suggest that unobservable credit risk is related to size. Berlin and Loeys (1988) predict that bank debt use increases lender informedness and decreases monitoring costs.

### Sample results

**Table 8:** Summary statistics for firms' size for successful and unsuccessful firms (in thousands of Rands).

	Successful	Unsuccessful
Count	29	28
Mean	111333.8	491607.9
Median	27674	137743.0
Standard error	37074.58	202532.1
Standard deviation	199652.7	1071699
Quartile Range	113609.6	198652.3
Lower quartile	9991.667	34465.17
Upper quartile	123601.3	233117.5
T stat	1.87796	
P value	.065693	



The study measures firm size by the book value of assets. The descriptive statistics contained in Table 8 shows that firms that restructure their claims successfully are smaller than unsuccessful firms. The mean of successful firms is R111333800 and the median size is R27674000. The smallest firm has a value of assets of R1421000 and the biggest has assets with a book value of R9061577000. These values are concentrated around the mean and the median. Twenty five per cent of firms have an book value of assets of R9991667 and the upper quartile or seventy five per cent of firms have a book value of assets of R123601300.

While the dispersion of size for successful firms is concentrated around the mean and median, different patterns are observed for unsuccessful firms. The mean value of book assets is R491607900 and the median value is R137743000. The smallest firm has a book value of assets estimated at R4664000 and the largest firm has a book value of assets of R4111008800. The lower quartile or twenty five per cent of firms have a book value of assets of R34465170 and the upper quartile have a book value of assets of R2333117500. The dispersion of central values is shown for size compared

by the book value of assets by figure 7. The difference observed in firm size suggests that the mean and the median for unsuccessful and successful firms are different. This is proved by the significant at p level of 0.0065693 and a higher T value of 1.87796.

In addition, results contained in Table 14 (see chapter 6) show that small, successful firms are more highly leveraged than large, unsuccessful firms as compared by the means of the market to book ratio and total liabilities to total assets. The market to book ratio is 1.1 for successful firms and 0.5 for unsuccessful firms. The ratio of total liabilities to total assets is 0.7 for successful firms and 0.6 for large firms. Moreover small successful firms use lower bank debt than large, unsuccessful firms, less long-term debt and the same level of short-term financing.

However, it is to be noted that the differences in mean for these results are not statistically significant at a p level of 0.05. The study can not therefore conclude that firm size is not consistent with the suggestions of Warner (1970) and Ang, Chua and Mc Connell (1982) that large firms should be highly leveraged.

This applies also to argument of Smith (1977) that large firms may prefer to issue long-term debt. The results suggest the opposite but the significance of the difference in mean for long-term and short term debt does not allow the study to conclude that these predictions are not consistent with results shown in Table 7.

Firm size may not be related to the predictions based on information and monitoring costs [Fama (1985) and Nakamura (1993)]. Large, unsuccessful firms in the sample use more bank debt than small, successful firms. The information cost associated with

the use of bank debt for high quality projects may also be inconsistent with the argument of Yosha (1995) that firms that use more bank debt have high quality projects. It is observed that unsuccessful firms use more bank debt than successful firms. The statistically insignificant p level between the mean in the use of bank debt (see section 4.6.2 ) does not allow any conclusive prediction for the models based on the efficiency of liquidation decisions that suggests that observable credit is linked to size.

Weiss (1990) has suggested that equity deviation in formal reorganisation is positively related to size of the distressed firms. Size may be an important determinant in equity deviation because it is correlated with bargaining complexity. Larger size implies that, on average, more parties are involved in negotiations, making it more difficult for creditors to form workable coalitions resulting in larger equity deviations.

## 5.2. Cash flow liquidity and performance.

Empirical studies provide evidence that firms that perform poorly file for bankruptcy protection. Gilson et al (1990) find that 53% of firms that performed poorly for at least three consecutive years filed for bankruptcy protection. The difference in proportion of bankruptcy filings between firms that restructured their debt successfully and those unsuccessful firms that filed for bankruptcy protection may be attributable to the length of the poor performance.

Stulz (1990) and Jensen (1986) use the free cash flow argument to predict a positive relation between leverage and actions that generate short-term cash flow. These models imply that debt service obligation will induce poorly performing firms to sell assets and divest operations.

An indication of sample liquidity is provided by the analysis of the current ratio. The decline in sample performance is provided by the analysis of the change in Ebit standardised by total assets during a pre-distress year or base year and the distress year. Another indication of performance is provided by the analysis of a three year change in the ratio of Ebit to total assets.

### 5.2.1. Cash flow liquidity

Jensen (1989) argues that highly levered firms respond faster to a decline in value than their less levered counterparts because a small decline in value can lead to an earlier default. Jensen's argument implies that a highly levered firm is more likely to restructure its operating performance and financial claims quickly to preserve its going concern value. When leverage is initially low, default occurs only after continuing losses drive the firm value substantially below its going concern value.

The decline in firm value gives creditors, in case of default, a right to monitor and demand restructuring because their contract with the firm has been breached. They can push the firm to liquidate or reorganise. Leverage can therefore lead to value maximisation by triggering liquidation [ Titman (1984)].

Harris and Raviv (1990) and Ofek (1991) report that debtholders monitor a firm after default and induce it to take value maximising actions regardless of the effect on short-term cash flow. The short-term cash flow solvency and liquidity measure is provided by the current ratio. It measures the degree to which current assets cover current liabilities. The excess of current assets over current liabilities provides a buffer against losses that may be incurred in the disposition or liquidation of the current assets other than cash. It provides, also, a measure of the reserve of liquid funds in excess of current obligation that is available as a margin of safety against uncertainty and the random shocks to which the flow of funds is subject. Random shocks, such as strikes, extraordinary losses, and other uncertainties, can temporarily and

unexpectedly stop or reduce the inflow of funds. A lack of liquidity may mean that the firm is unable to take advantage of profitable business as they arise. At this stage a lack of liquidity implies a lack of freedom of choice as well as constraints on management's freedom of movement.

### Sample results

**Table 9:** Summary statistics of current ratio for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	28	25
Mean	3.5	1.9
Median	1.63	1.4
Standard Error	1.08	.4
Standard deviation	5.9	2.
Quartile Range	1.6	1.0
Lower quartile	.971	1.0
Upper quartile	2.6	2.0
T stat	-1.28499	
P value	.204601	

Figure 9  
Mean of cash flow liquidity

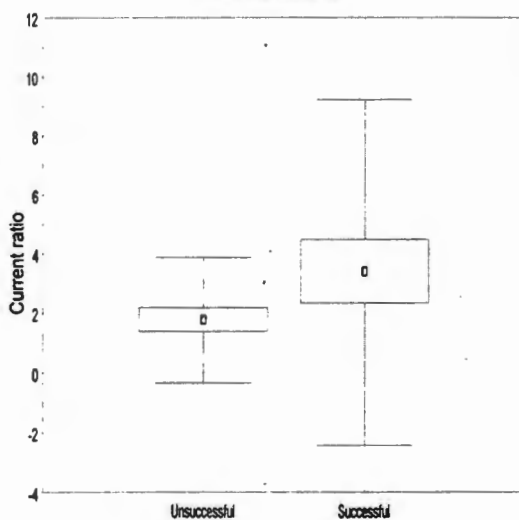
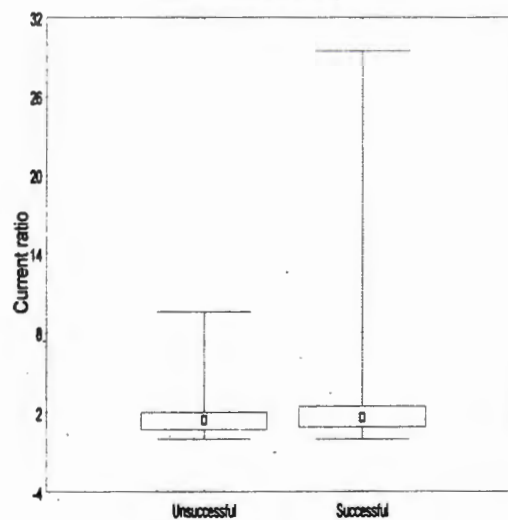


Figure 10  
Median of cash flow liquidity



The analysis of the sample results contained in Table 9 shows that the mean value of the current ratio is 3.5 for successful firms and 1.9 for unsuccessful firms. The difference is apparent by examining the box and whisker plots (figure 9 and 10) for the difference in mean. However, the analysis of the median shows that both successful and unsuccessful firms have a lower median value, 1.63 for successful firms and 1.4 for unsuccessful firms. This is confirmed when analysing the box and whisker plots for the difference in median value. This implies that the higher level in mean for successful firms is influenced by upward outliers. The analysis of other measures of dispersion tends to confirm this effect. The quartile range is 1.6 for successful firms and 1.0 for unsuccessful firms. The lower quartile values for the sample are very close with 0.971 for successful firms and 1.0 for unsuccessful firms. Differences appear in the upper quartile values where successful firms have an upper quartile value of 2.6 as compared to 2.0 for unsuccessful firms.

### 5.2.2. Cash flow performance

The judgements of a proper cash flow performance are based on a close and frequent monitoring of earnings performance as compared with earlier estimates or performance. The variability of earnings is an important factor in the determination of the coverage standard of a firm. In addition, the durability and the trend of earnings are important factors that must be considered apart from the variability.

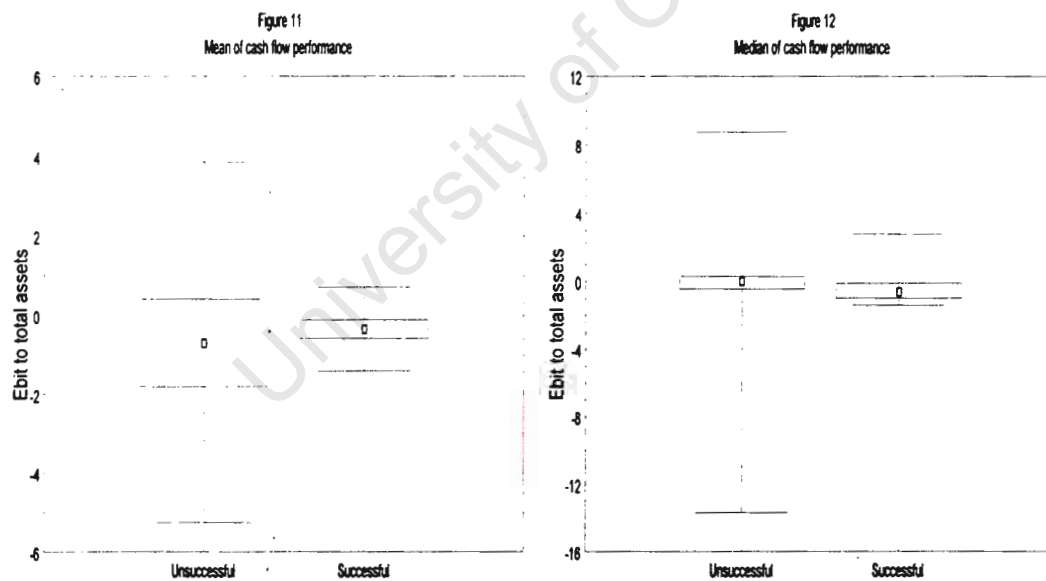
Results contained in Table 7 show that successful firms performed better than unsuccessful firms with a mean ratio of Ebit to total assets of -0.3 for successful firms and -0.7 for unsuccessful firms. This ratio measures a three year average performance. However, this average measure does not provide any indication on how these firms performed at the onset of financial failure. Firm performance varies largely from one period to another and, for this purpose, an analysis of firm performance and variability is provided by analysing the change in Ebit scaled by total assets. The change in cash flow performance is reported as the change in base year and distress year. An analysis of the results contained in Table 7 shows that successful firms performed better in base year with a mean value of 0.021 as compared to -0.4 for unsuccessful firms. However, this cash flow performance deteriorated further in distress year for successful firms than for unsuccessful firms. The mean ratio of cash flow performance is -0.5 for successful firms and -0.3 for unsuccessful firms. This shows that, while value deteriorated further for successful firms, at the same time progress was observed for unsuccessful firms.

### 5.2.2.1. Average ratio of Ebit to total assets

#### Sample results

Table 10: Summary statistics for the ratio of operating profit to total assets for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	20	17
Mean	-.3	-.7
Median	-.60	.0191
Standard error	.24	1.1
Standard deviation	1.1	5.
Quartile Range	.9	.8
Lower quartile	-1.0	-.45
Upper quartile	-.1	.3
T stat	-.33858	
P value	.736948	



The results in Table 10 show that unsuccessful firms performed poorly compared to successful firms. The average ratio of Ebit to total assets for a period of three years indicates poor performance for both successful and unsuccessful firms. The mean value is -0.3 for successful firms and -0.7 for unsuccessful firms. The difference in

median values indicates a median value of -0.60 for successful firms and 0.019 for unsuccessful firms.

Analysis of other measures of dispersion and box and whisker plots indicates a large dispersion for unsuccessful firms. Dispersion values are centred around the median for successful firms with a quartile range of 0.9, a lower quartile value of -1.0 and upper quartile of -0.1. The minimum value is 1.401 and the maximum is 2.8. On the other hand , unsuccessful firms have a minimum value of -13.695 and a maximum value of 9. Indication of dispersion values provided by Table 10 shows that the quartile range is 0.8, the lower quartile is -0.45 and the upper quartile 0.3. The difference in mean is not statistically significant at a p level of 0.05 and the inconclusiveness of the results necessitates a further study of how poor performance varied over time.

### 5.2.2.2. Change in Ebit to total assets during the base year.

#### Sample results

Table 11: Summary statistics for the ratio of Ebit 1 to total assets for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	17	17
Mean	.021	-.4
Median	-.19	.1
Standard error	.31	.6
Standard deviation	1.3	2.
Quartile Range	.9	1.1
Lower quartile	-.55	-.66
Upper quartile	.4	.5
T stat	-.65211	
P value	.518985	

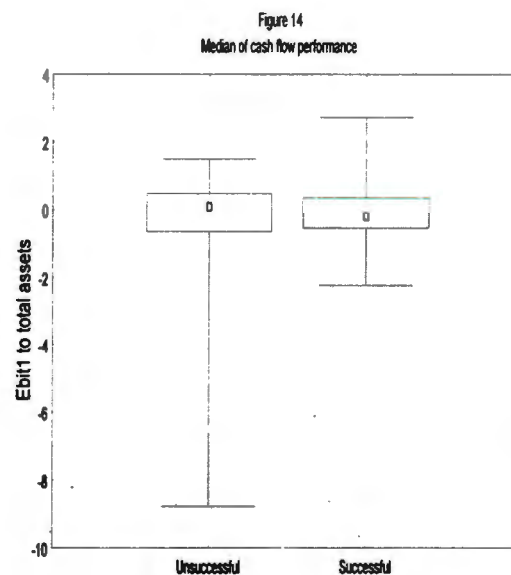
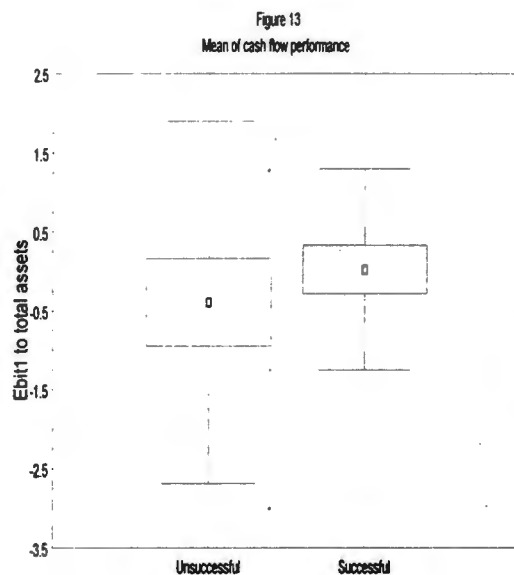


Table 11 shows that successful firms performed better than unsuccessful firms compared by their mean value. Table 11 indicates a mean value of 0.021 for successful firms and -0.4 for unsuccessful firms. However the analysis of the

difference in median suggests the opposite. This time, the median value for successful firms is lower at -0.19 and the median value for unsuccessful firms is 0.1. An analysis of the box and whisker plots for the median (figure 14), shows clearly that the lower mean value is affected by downward outliers. Other measures of dispersion give a quartile range of 0.9 for successful firms and 1.1 for unsuccessful firms. The lower quartile is -0.55 for successful firms and -0.66 for unsuccessful firms. The upper quartile is 0.4 for successful firms and 0.5 for unsuccessful firms. These results show that central and dispersion values are centred around the mean for successful firms in comparison with results obtained for unsuccessful firms. The difference is not, however, statistically significant with a p level of 0.518985 and a negative and lower T stat of -0.65211 to allow the conclusion that there was any difference in performance during the base year.

### 5.2.2.3. Change in Ebit to total assets during the distress year.

#### Sample results

**Table 12:** Summary statistics for the ratio of Ebit 2 to total assets for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	22	17
Mean	-.5	-.3
Median	-.78	.2
Standard error	.29	3.0
Standard deviation	1.3	12
Quartile Range	1.5	1.2
Lower quartile	-1.282	-.18
Upper quartile	.3	1.0
T stat	.10433	
P value	.917468	

Figure 15  
Mean of cash flow performance

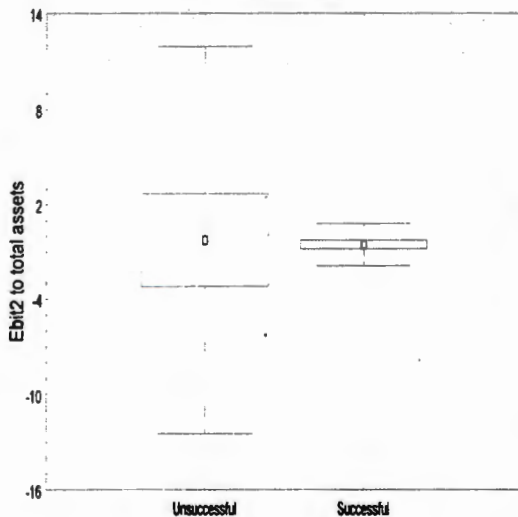
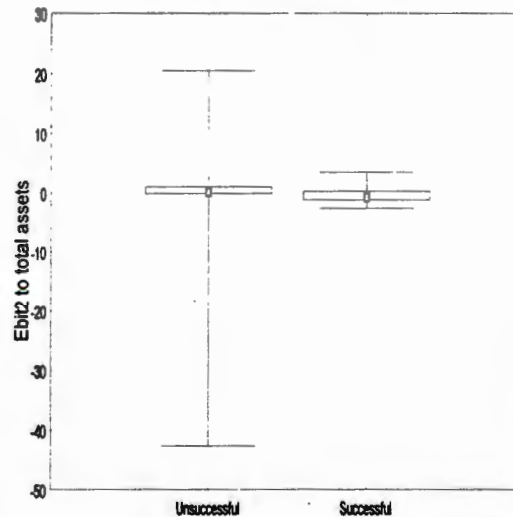


Figure 10  
Median of cash flow performance



Results displayed in Table 12 shows that firm performance deteriorated further for successful firms at the same period where unsuccessful firms performed better than in base year. During the distress year, the mean value of successful firms is -0.5 while unsuccessful firms present a mean value of -0.3. This poor performance is confirmed when analysing the median values. The median value for successful firms is -0.78 and

0.2 for successful firms. Other measures of dispersion give a quartile range of 1.5 for successful firms and 1.2 for unsuccessful firms. The lower quartile is -1.282 for successful firms and -0.18 for unsuccessful firms. The upper quartile is 0.3 for successful firms and 1.0 for unsuccessful firms. These results are not statistically significant with a p level of 0.917468. A comparison of firm performance during the base and distress year gives an indication that the value of successful firms deteriorated quickly. This may be consistent with the theory that firms experiencing a substantial decline in cash flow performance react quickly to preserve their going concern value [Jensen (1989)].

**5.3 Recontracting period.**

The recontracting period represents the time spent in informal reorganisation. The period in informal reorganisation is measured from the suspension date at the Johannesburg Stock Exchange to the date a firm is re-instated or delisted from the Stock Exchange.

**Sample results**

Table 13: Summary statistics for the recontracting period for successful and unsuccessful firms (in months).

	Successful	Unsuccessful
Count	28	23
Mean	7.6	5.1
Median	7.00	.03
Standard error	1.17	1.8
Standard deviation	6.2	9.
Quartile Range	8.0	10.0
Lower quartile	3.0	.03
Upper quartile	11.0	10
T stat	-1.16671	
P value	.248972	

Figure 17  
Mean of the recontracting period

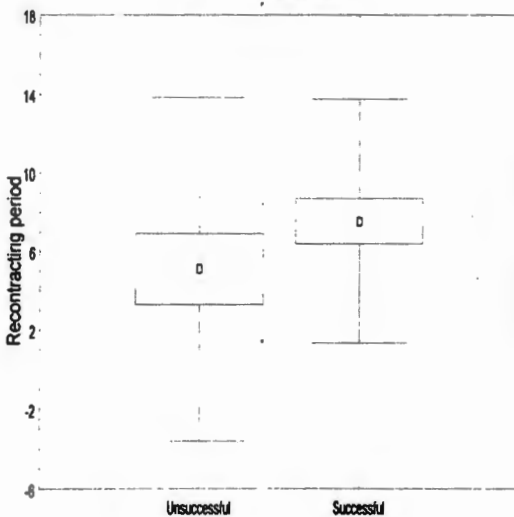
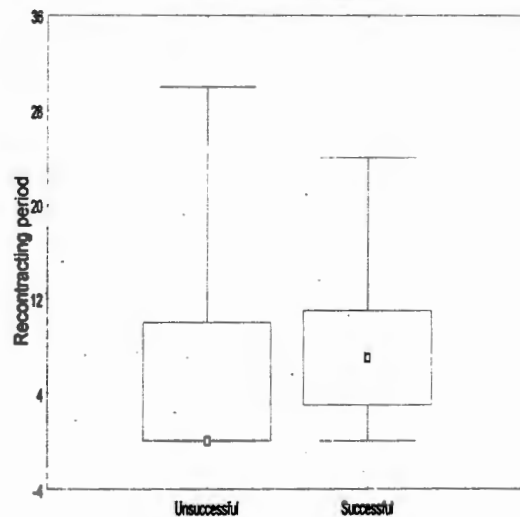


Figure 18  
Median of the recontracting period



The sample results show that successful firms spend more time in reorganisation of their financial structures than unsuccessful firms. The mean value of time spent in reorganisation is 7.6 months for successful firms and 5.1 months for unsuccessful firms. There is huge gap in differences of time spent during reorganisation when analysing the dispersion around central values. The median time spent in reorganisation is 7.0 months for successful firms and 0.03 for unsuccessful firms. This result suggests that 50% of unsuccessful firms are not granted a suspension period and are just delisted the same day on the Johannesburg Stock Exchange. An examination of the quartiles show that 25% of unsuccessful firms are delisted after 0.03 month or one day trading. The lower quartile time spent in reorganisation is 3.0 months for successful firms. The upper quartile values show that the time spent in reorganisation for successful firms is 11 months and 10 months for unsuccessful firms. The upper quartile value for unsuccessful firms is influenced upward by the average time spent in reorganisation for unsuccessful firms as shown by figure 18.

### **Summary of chapter 5.**

The study finds that size characteristic is not consistent with the suggestion of Warner (1970) and Ang, Chua and Mc Connell (1982) that small firm should not be highly levered (see results in chapter 6). Size characteristic is not related to information and monitoring costs as predicted by Fama (1985), Nakamura (1993) and Yosha (1995). This is because small firms use less bank debt which signals project quality. However the findings are consistent with the argument of Weiss (1990) that size is correlated with bargaining complexity.

Models based on the free cash flow theory [Jensen (1986) and Stulz (1990)] predict a relation between leverage and actions that generate short-term cash flow. In addition, firms that experience a substantial decline in cash flow performance react quickly to preserve their going concern value [Jensen (1989)]. The findings are consistent with these predictions. Firms that restructure their claims successfully experienced a sharp decline in their cash flow performance. However, the time spent in recontracting mechanisms is longer for successful firms than the time spent by unsuccessful firms.

## Chapter 6 Leverage Characteristics

### Introduction

Different measures of financial leverage are used in this study. They are market to book ratio and total liabilities to total assets. Some theories of capital structure have different implications for the different types of debt. Total leverage is analysed by using two leverage ratios. The first is the ratio of total debt to the market value of assets and the second is the ratio of total liabilities to total assets. Each ratio may contain some measurement error, in the sense that management may refer to some other ratio or variable when setting their firm's debt level. Titman and Wessels (1988) report that some managers consider leverage ratios based on market values when setting their firm's debt level, while others look at leverage based on book values. However, there is no reason to expect either of the two leverage ratios used to be a biased estimate of the "true" leverage ratio.

The need to compute two leverage ratios arises from the fact that accounting data place emphasis on historical costs rather than on current values. It is assumed that the valuation placed by the market recognises the current value of assets and their earning power. Objection to the use of market values is generally due to their volatile character. This argument is countered in the study by the use of average market value and debt for a period of three years. The use of average value can therefore provide more realistic leverage ratios.

**Table 14:** Leverage characteristics for firms that successfully restructured their claims and were re-instated at the Johannesburg Stock Exchange and firms that were delisted after a debt restructuring

	<u>Successful firms</u>				<u>Unsuccessful firms</u>				p value
	Mean	Median	Min	Max	Mean	Median	Min	Max	
Market book ratio	1.1	.66	.021	7.1	.5	.4	.008	2	.071993
Debt book value of assets	.7	.57	.154	2.	.6	.7	.017	1	.29547

Leverage characteristics in Table 14 indicate that the mean and the median of the market to book ratio are higher for successful firms. The differences in means and medians are significant at a p level of 0.072. The mean ratio of debt to the book value of assets is higher for successful firms than unsuccessful firms but the opposite occurs with the difference in median values. The minimum market to book ratio value is 0.021 for successful firms and 0.008 for unsuccessful firms. The maximum market to book value is 7.1 for successful firms and 2 for unsuccessful firms. The results obtained for the difference in the ratio of debt to book value of assets show that successful firms have a higher mean value than unsuccessful firms. The mean value of debt to book value of assets is 0.7 for successful firms and 0.6 for unsuccessful firms. The median value is higher for unsuccessful firms with a debt to book value of 0.7 and 0.57 for successful firms. The minimum debt to book value is 0.154 for successful firms and 0.017 for unsuccessful firms. The maximum is 1 for unsuccessful firms and 2 for successful firms. The debt to book value of assets ratio is not statistically significant to conclude that leverage characteristics are different for the sub-sample.

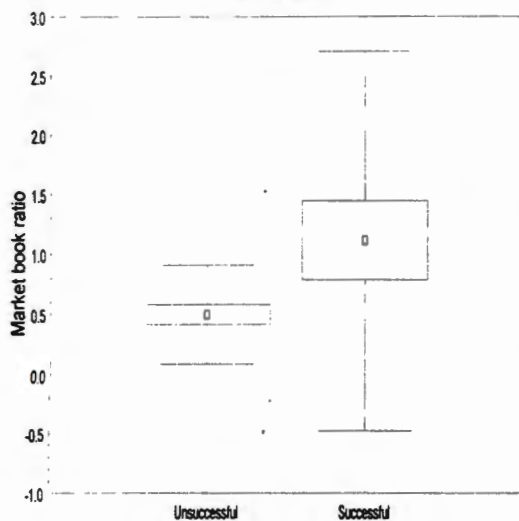
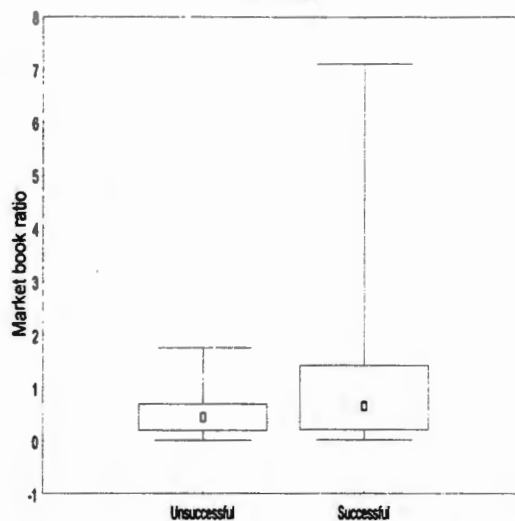
### 6.1. Market to book ratio

The ratio of the market value of a firm's assets to its book value measures investment opportunities. Theoretically, firms that make net present value investments will have market values equal to their book values. Firms with market values greater than book values would be earning returns greater than their required returns and firms with market values less than book values would be earning returns less than their cost of capital. If book values for these latter firms were close to the liquidation value of assets, the owner of these assets would be better off financially if the company liquidated its assets.

#### Sample results

Table 15: Summary statistics for the market to book ratio for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	23	24
Mean	1.1	.5
Median	.66	.4
Standard error	.33	.1
Standard deviation	1.6	.41
Quartile Range	1.2	.5
lower quartile	.209	.19
upper quartile	1.4	.7
T stat	-1.84252	
P value	.071993	

Figure 19  
Mean of leverageFigure 20  
Median of leverage

The mean value of market to book ratio is higher for successful firms than unsuccessful firms. The mean values are 1.1 and 0.05 respectively for successful and unsuccessful firms. The median values are 0.66 for successful firms and 0.4 for unsuccessful firms. The difference in mean is statistically significant at a p ratio of 0.071993. The minimum value for unsuccessful firms is 0.021 and the maximum 7.1. There is greater variability of values in the mean book ratio with a lower quartile of 0.209 and an upper quartile mean of 1.4. The distribution of book ratio is concentrated around the mean book ratio for unsuccessful firms. The minimum value is 0.008 and the maximum 2.0. The lower quartile is 0.19 and upper quartile is 0.7. The p value of 0.071993 is statistically significant to conclude that successful firms represent firms with greater market opportunities because they may produce unique or specialised products. The market to book ratio is indicative of firms with growth options and discretionary investments that can be destroyed easily in an inefficient recontracting mechanism.

## 6.2. Total liabilities to total assets.

### Sample results

**Table 16:** Summary statistics for the ratio of total liabilities to total assets for successful and unsuccessful firms

	Successful	Unsuccessful
Count	27	28
Mean	.7	.6
Median	.57	.7
Standard error	.09	.1
Standard deviation	.5	.06
Quartile Range	.4	.4
Lower quartile	.535	.42
Upper quartile	.9	.8
T stat	-1.05664	
P value	.295470	

Figure 21  
Mean of leverage

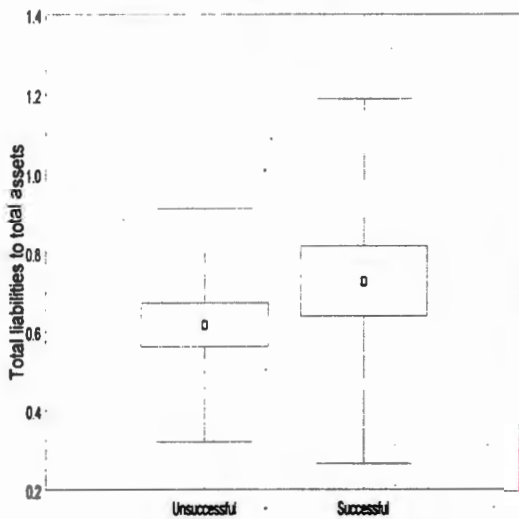
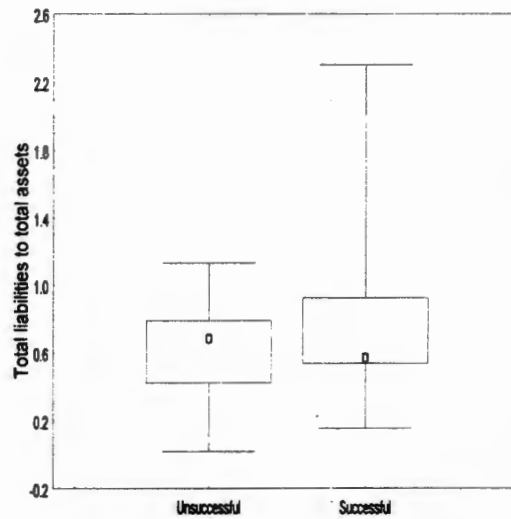


Figure 22  
Median of leverage



Analysis of the sample yields an important factor about the capital structure. Successful firms are more highly leveraged than unsuccessful firms. The mean ratio is 0.70 for successful firms and 0.60 for unsuccessful firms. The median value for

successful firms is 0.57 and 0.70 for unsuccessful firms. It appears that while the mean value for successful firms is higher than that of unsuccessful firms, their median values are in reverse order. It is necessary to look at the distribution of values in the sample. The minimum debt ratio is 0.154 and the maximum is 2.3. Twenty five per cent of the sample has a debt ratio of 0.535 and seventy five per cent of the firms have an average debt ratio of 0.90. The unsuccessful firms have a minimum of 0.017 and a maximum of 1. The lower quartile represents firms with a debt ratio of 0.42 and the upper quartile with a debt ratio of 0.80. This shows a high variability of firm specific characteristics, as shown by figure 22.

### **Summary of chapter 6.**

The study uses two different measures of financial leverage, the market to book ratio and debt to book value of assets. The study finds that successful firms are levered by the market to book ratio and debt to book value of assets. The difference in means for the market to book ratio for successful and unsuccessful firms is statistically significant. This result is consistent with the theory linking the market to book ratio to a measure of investment opportunities that can be destroyed easily in an inefficient recontracting mechanism [Gilson et al (1990), Scheifler et al (1992)].

## Chapter 7 Financing of Assets Characteristics

### Introduction

This section analyses how both groups of firms that restructure their claims at the Johannesburg Stock Exchange finance their activities. Firms combine the use of long-term and short-term financing, which helps firms to service their debt. If a firm was to invest all its funds in properties, for example, this may cause a liquidation of assets in a recession period. A firm that is badly affected in a recession may not be able to sell some of its assets to service its short-term debt because of the proportion of long-term debt overhang. If debt is not rescheduled the firm may be forced into liquidation. Furthermore, it cannot limit its abilities to finance short-term operations.

Borrowed funds can be used to finance current operations (short-term) or may be invested in production facilities or fixed assets that generally last for a long period of time. A general feature in financing assets is that long-term or short-term borrowed funds can be secured or unsecured. All these features have different implications for firms that experience poor performance.

The collateral features of a security have an impact in controlling the agency costs of debt, limiting the claim dilution, specialisation of assets, loan maturity or minimising information asymmetries between borrowers and lenders.

Table 17 presents the financing of assets characteristics for the two groups of firms.

These characteristics are the ratio of long-term, short-term and fixed assets respectively to total assets, the use of secured and unsecured debt

**Table 17.** : Sample assets financing characteristics for firms that restructured their claims successfully and were re-instated on the Johannesburg Stock Exchange and firms that were delisted after an unsuccessful debt restructuring.

	<u>Successful firms</u>				<u>Unsuccessful firms</u>				p value
	Mean	Median	Min	Max	Mean	Median	Min	Max	
Long term debt Total assets	.2	.09	.019	.6	3	.2	.009	1	.259065
Short term debt Total assets	.4	.29	.011	2.0	.4	.4	.021	1	.928532
Fixed assets Total assets	.4561	.2990	.0023	1	.4530	.4245	.0543	.9865	.9740
Secured debt (000)	2145	990	16.334	7285	73648.8	6171	132	813333	.2251
Unsecured (000)	76006.47	2000	14	505686.7	105058	11024	413	1255000	.7941

The mean and median of the ratio of long-term debt to total assets reveal that unsuccessful firms have more long-term debt than successful firms. The minimum value of long-term debt to total assets is 0.019 for successful firms and 0.009 for unsuccessful firms. The maximum value is 0.6 for successful and 1 for unsuccessful firms. The mean and median for unsuccessful firms are higher than those for successful firms but the difference in mean is not statistically significant.

Successful and unsuccessful firms appear to have the same level of short-term and fixed assets finance. Their means are quite close but the medians of unsuccessful firms are greater than those successful firms. The minimum value of the short-term debt to total assets ratio is 0.011 for successful firms and 0.021 for unsuccessful firms. The maximum value of short-term debt to total assets ratio is 1 for unsuccessful firms and 2 for successful firms. For the fixed assets to total debt ratio, the minimum value is 0.0023 for successful firms and 0.0543 for unsuccessful firms. The maximum fixed

assets to total debt ratio is 1 for successful firms and 0.9865 for unsuccessful firms. Both the results for the short-term debt to total assets and fixed assets to total assets ratios are not statistically significant, at a p level of 0.05, to conclude that there is a difference in the sub-sample.

Unsuccessful firms appear to use more secured and unsecured debt in comparison to successful firms. Their mean and median are higher than those of successful firms. As in the long-term-debt ratio, short-term-debt and fixed assets to total assets ratios, the study finds that these differences in assets financing are not statistically significant at a p level of 0.05.

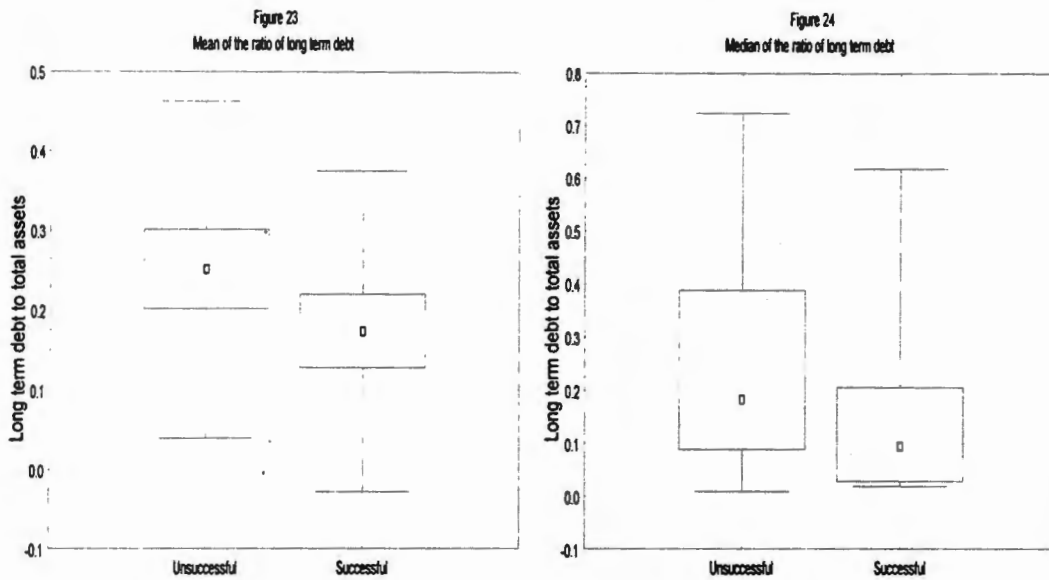
### 7.1. Long-term debt to total assets.

Some debt choice theoretical models use maturity differences across the sources to generate predictions. According to Brick and Ravid (1991), long term debt increases debt capacity. According to Diamond (1991b) both firms with high credit quality and firms with low credit quality use short-term debt; medium quality firms use long-term debt. Other models predict that firms with high asset liquidation values will show a higher preference for short-term debt [Houston and Venkataraman (1994)].

#### Sample results

Table 18: Summary statistics for the ratio of long-term debt to total assets for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	19	18
Mean	.2	.3
Median	.09	.2
Standard error	.05	.05
Standard deviation	.2	.21
Quartile Range	.2	.3
Lower quartile	.028	.09
Upper quartile	.2	.4
T stat	1.14724	
P value	.259065	



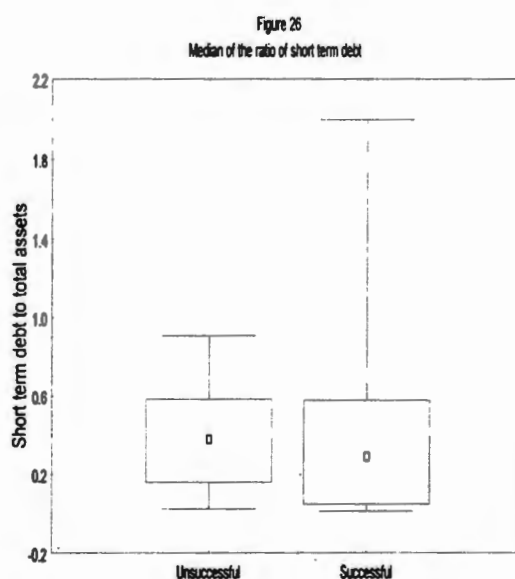
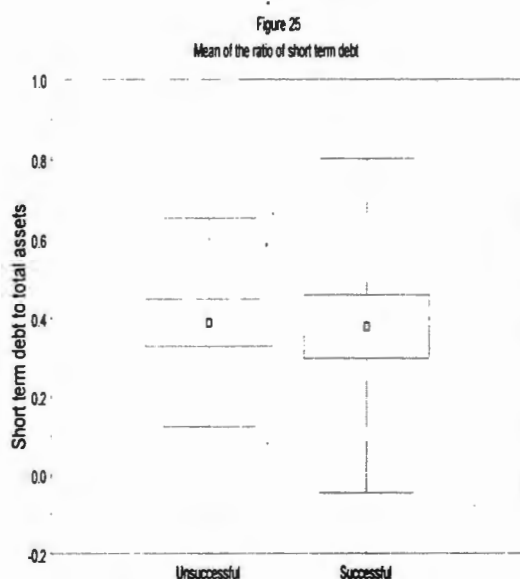
From Table 18, it appears that unsuccessful firms use more long-term debt than successful firms. The mean proportion of long term debt in assets financing is 0.3 for unsuccessful firms and 0.2 for successful firms. This proportion increases when analysing the differences in median and other dispersion measures. The median proportion for the use of long-term debt is 0.2 for unsuccessful firms and 0.09 for successful firms. The lower quartile is 0.09 for unsuccessful firms and 0.028 for successful firms. The upper quartile is 0.4 for unsuccessful firms and 0.2 for successful firms. The difference in mean is not statistically significant at a p level of 0.05. As a consequence, the study can not conclude that unsuccessful firms, with higher mean and median values of long-term debt compared to those of successful firms, constitute a sample of medium-quality firms as suggested by Diamond (1991b).

## 7.2. Short-term debt to total assets

### Sample results

Table 19: Summary statistics for short-term to total assets ratio for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	27	19
Mean	.4	.4
Median	.29	.4
Standard error	.08	.1
Standard deviation	.4	.27
Quartile Range	.5	.4
Lower quartile	.046	.16
Upper quartile	.6	.6
T stat	.09021	
P value	.928532	



The mean for short-term assets financing is equal at 0.4 for successful and unsuccessful firms. The difference in median shows that unsuccessful firms finance their assets with short-term debt more than do their successful counterparts. The median proportion of short-term financing is 0.4 for unsuccessful firms and 0.29 for

successful firms. The lower quartile is 0.16 for unsuccessful firms and 0.046 for successful firms. The upper quartile is 0.6 for both successful and unsuccessful firms. The difference in mean is not statistically significant at a p level of 0.05 to conclude that successful firms, with a higher market to book ratio (see section 6.1), have a preference for short-term debt, as suggested by Houston and Venkataraman (1994).

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### 7.3 Fixed assets to total assets.

#### Sample results

**Table 20:** Summary statistics for fixed assets to total assets ratio for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	25	25
Mean	.4561	.453
Median	.299	.4245
Standard error	.0772	.0577
Standard deviation	.386	.2883
Quartile Range	.82	.29
Lower quartile	.1215	.256
Upper quartile	.937	.546
T stat	-.0327	
P value	.974	

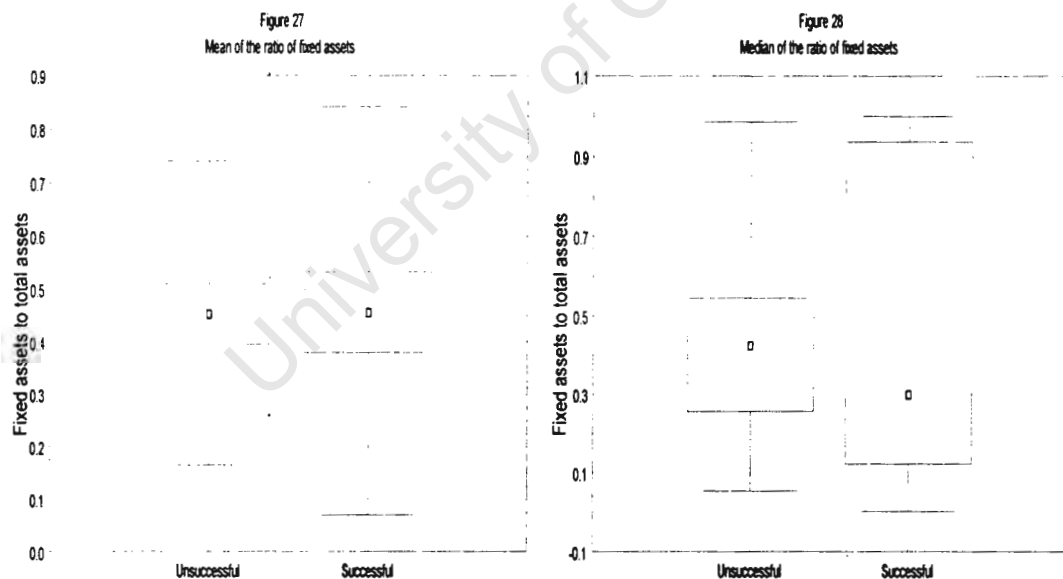


Table 20 shows that successful and unsuccessful firms use the same level of fixed assets to total assets but the median for successful firms is lower compared to that of unsuccessful firms. The quartile range is higher for successful firms, as shown by figure 28. The quartile value is 0.8151 for successful firms and 0.29 for unsuccessful firms. The lower quartile is 0.1215 for successful firms and 0.256 for unsuccessful firms.

firms. The upper quartile is 0.9366 for successful firms and 0.546 for unsuccessful firms. The difference in mean is not statistically significant, at a p level of 0.05, to give any indication of difference in financing of assets in the sub-sample.

#### 7.4. Secured and unsecured debt

Existing theories claim that secured debt lowers net borrowing cost by reducing agency costs, limiting claim dilution, or minimising information asymmetries between borrowers and lenders. Some models link security of debt to size of the firm, specialisation of assets, time to maturity and loan size.

Scott (1977) has formally demonstrated that the value of secured debt rises as the possibility of default increases. Thus, he argues that firms with a high probability of bankruptcy will find that the benefits of secured debt outweigh the costs, while firms with a low probability of bankruptcy will find that the costs outweigh the benefits. An agency cost explanation of collateral is that the factors increasing the likelihood of non-payment, such as relatively inexperienced management, high leverage, great business risk, long time to maturity, or depressed economic conditions, should likewise be associated with the use of secured debt.

During a bankruptcy proceeding, a court can prevent bondholders from taking possession of assigned property in reorganisation proceedings if collateral is judged necessary for the continued operations of the firm [Warner (1977) and Smith and Warner (1979b)]. Bondholders must anticipate selling assets easily at bankruptcy for borrowers to use collateral to bond against claim dilution or to reduce expected foreclosure costs. Since liquidation assures that secured creditors will receive title to the pledged assets, companies more likely to be liquidated in bankruptcy should offer more collateral more frequently than companies less likely to be liquidated. Smith and

Warner (1979a) argue that a smaller firm has a greater chance of liquidation than a larger firm, smaller firms should therefore use secured debt more frequently.

Chan and Kanatas (1985) also predict that newer and smaller companies will offer collateral more frequently than other types of firms. Collateral is a more valuable signal of project quality when lenders have less information concerning a firm's operations. Similarly, collateral may reduce debt expenses more greatly for small companies because of their higher probability of bankruptcy [Altman, Haldeman, and Narayanan (1977)] .

When assets are highly specialised, their value to the firm is higher than their value to the market place. The high cost of selling these assets reduces management's economic incentives to substitute high-risk projects. Since asset specificity reduces creditor concerns with asset substitution, it lowers the value of bonding against this type of opportunistic behaviour. Additionally, borrowers cannot dramatically reduce lenders' expected foreclosure costs by pledging assets that have a much lower value if sold to the next highest bidder [Leeth and Scott (1979) and Stultz and Johnson (1985)]. Various theories predict that the companies with more specialised assets should offer security less frequently than other companies. Therefore, the variation in asset specificity and marketability among industries should cause a corresponding variation in the use of secured debt.

Creditors can attempt to prevent opportunistic behaviour either by monitoring the actions of the borrowers or by punishing misbehaving borrowers ex post and by increasing interest rates on future loans. Firms considering substituting high-risk

projects realise that the wealth transfer on short-term debt is relatively small, whereas the reputation cost (higher future interest rates) is relatively large. Because short-term debt minimises the incentive for asset substitution, the benefit to the firm of bonding against this type of behaviour is correspondingly small. Consequently, short-term creditors will rely heavily on the relatively cheap reputation effect, while long-term creditors will rely on more expensive bonding mechanisms such as collateral provisions [Schwartz (1981)].

Even in the absence of reputation effect, firms should secure long-term debt more frequently than short-term debt because of the direct costs of assets substitution [Jackson and Kronman (1979)]. With long-term debt, borrowers can gradually and economically alter projects in subtle ways that impair creditors' position. With short-term debt, however, the speed required to substitute assets raises costs sufficiently to prevent this type of opportunistic behaviour.

Finally loan maturity may increase the pledging of collateral because of the higher probability of default on long-term debts. During each time period, the company faces some probability of an adverse event precipitating bankruptcy. As the number of loan periods increases, the probability that at least one event will cause the company to default likewise increases. Because default risk raises the value of secured lending, long-term debt should be more frequently unsecured than short-term debt.

In contrast, Stulz and Johnson (1985) argue that a company should secure short-term debt more frequently than long-term debt. Assuming that new debt will have the same

maturity as existing unsecured debt, they demonstrate that the value of a security provision is a decreasing function of time to maturity.

As loan size increases, per unit monitoring and administrative expenses fall, making secured debt more economical. Therefore, holding everything constant, larger loans should be more frequently secured than smaller loans [Jackson and Kronman (1979)].

Loan size may also increase the use of collateral because of the impact on leverage. Loan size increases the debt to value ratio of the firm if the loan replaces equity or serves as the sole source of financing for a new project. With either assumption, an increase in loan size should raise the likelihood of secured lending by increasing the probability of bankruptcy. Larger companies have a lower probability of liquidation at bankruptcy and consequently should offer collateral less frequently than smaller companies.

### 7.4.1. Secured debt

#### Sample results

**Table 21:** Summary statistics for short-term secured debt for successful and unsuccessful firms (in thousands of Rands).

	Successful	Unsuccessful
Count	15	13
Mean	2145	73648.8
Median	990	6171
Standard error	676.93	61843.78
Standard deviation	2621.7	222980.9
Quartile Range	4004	12930.5
Lower quartile	136	2614
Upper quartile	4140	15544.5
T stat	1.242413	
P value	.225174	

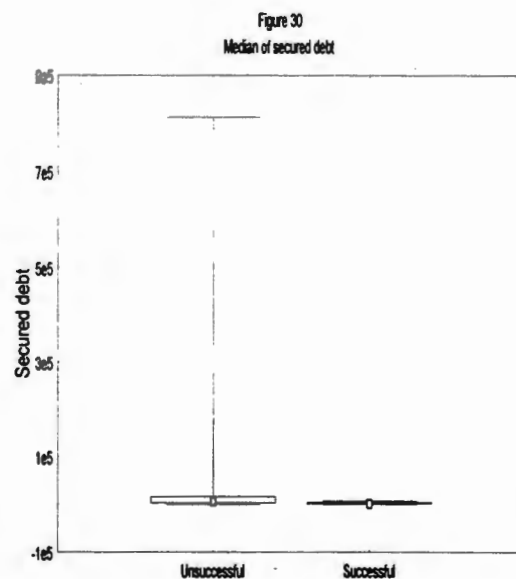
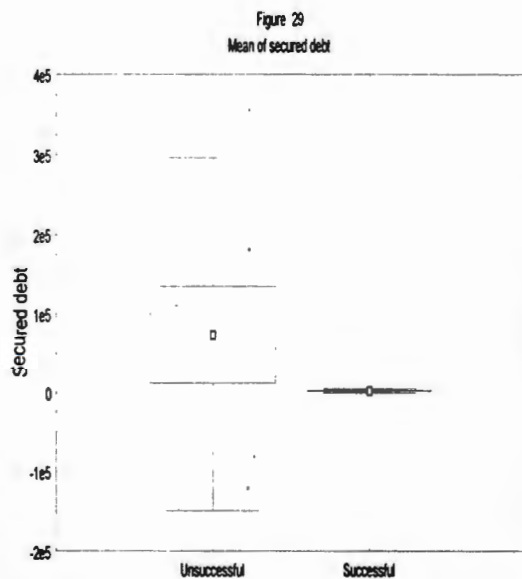


Table 21 shows that successful firms use less secured debt than their unsuccessful counterparts. The mean of secured debt for successful firms is 2145 while it is 73648.8 for unsuccessful firms. However, the extent of the use of secured debt for unsuccessful firms decreases when the differences in median are analysed. It appears that the median value of secured debt for unsuccessful firms is relatively low with a

median value of 6171. The median value decreases slightly for successful firms with a value of 990. This result suggests that the value of the mean for unsuccessful firms may be influenced by upward outliers as shown by figure 30. The lower quartile value is 136 for successful firms and the upper quartile 4140. The lower quartile for unsuccessful firms is 2614 and the upper quartile 15544.5.

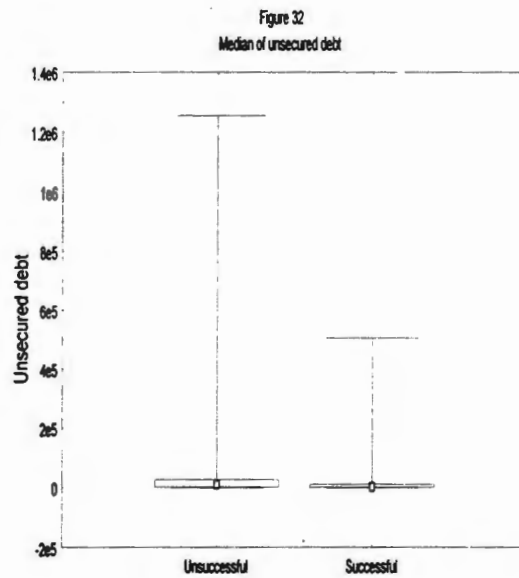
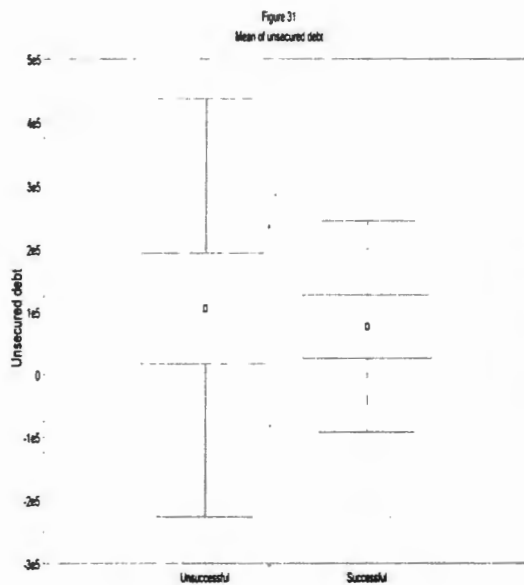
Some observation need to be noted. The use of secured debt may be related to size and as a consequence, large, unsuccessful firms may use more collateral than smaller, successful firms (see section 5.1). In addition, as suggested by Scott (1977), large, unsuccessful firms may use more collateral as the probability of default increases. This is in contradiction to the argument of Smith and Warner (1979a) that smaller firms should use more secured debt because of their greater chance of liquidation of assets. This applies also to the prediction of Chan and Kanatas (1985) that newer and smaller firms should use collateral more frequently than other types of firms. However, it appears that successful firms, with a higher market to book ratio, as indicated in section 6.1, offer less collateral, as suggested by Scott (1977) and Stulz and Johnson (1985). Results contained in Table 21 are not statistically significant at a p level of 0.05 to conclude that any of the theoretical implications apply to the sub-sample.

## 7.4.2. Unsecured debt

### Sample results

Table 22: Summary statistics for the use of unsecured debt for successful and unsuccessful firms (in thousands of Rands).

	Successful	Unsuccessful
Count	11	14
Mean	76006.47	105058.5
Median	2000	11024
Standard error	50927.03	88643.15
Standard deviation	168905.8	331672.3
Quartile Range	10343	25104.17
Lower quartile	619	1674.333
Upper quartile	10962	26778.5
T stat	.264029	
P value	.794109	



From Table 22, it appears that successful firms rely heavily on financing with unsecured debt, in comparison with secured debt. The mean for the use of unsecured debt for successful firms is 76006.47 and for unsuccessful firms the mean is 105058.5. The value for unsecured financing drops when the median value for successful and unsuccessful firms is compared. The median value is 2000 for successful firms and

11024 for unsuccessful firms. The lower quartile is 619 for successful firms and 1674.333 for unsuccessful firms. The upper quartile is 10962 for successful firms and 26778.5 for unsuccessful firms. The results in Table 22 suggests that the difference in mean is not statistically significant at a p level of .05 to conclude any difference in the use of unsecured debt for the sub-sample.

### **Summary of chapter 7.**

The choice of assets financing policy plays an important role in debt service obligation for failing firms in case of liquidation of assets. The study finds that successful firms may constitute a sample of medium firm quality, as suggested by Diamond (1991b). Houston and Venkataraman (1994) predict that firms with a higher market to book ratio use more short-term debt. However the study finds that both successful and unsuccessful firms use the same level of short-term debt. They also have the same patterns in fixed assets financing.

Assets financed with secured debt can reduce the agency cost of debt, limit claim dilution or minimise information asymmetry between borrowers and lenders. The study finds that unsuccessful firms use more secured debt, as suggested by Scott (1977). This is because firms that are likely to liquidate use more collateral. Conversely, the study finds that small, successful firms use less collateral. The results are also consistent with the models of Leeth and Scott (1979) and Stulz and Johnson (1985) on assets substitution problem, which suggest that firms with lower market to book ratio should offer more collateral. The results are consistent with the monitoring hypothesis of Schwartz (1981) and reputation effects hypothesis of Jackson and

Kronman (1979). However, the results are in contradiction of the predictions of Smith and Warner (1979a,b) and Warner (1977) on agency cost. The results are also in contradiction of the asymmetric information hypothesis of Chan and Kanatas (1985) and Altman, Haldeman and Naranayan (1977).

## Chapter 8 Debt Maturity Characteristics

### Introduction

Different theoretical models link the maturity of debt to liquidity and screening, agency costs of debt and asymmetric information.

a) Liquidity risk and screening: The risk of not being able to refund debt because of deterioration in financial or economic conditions can motivate firms to lengthen the maturity of their debt. According to Sharpe (1991), Diamond (1991a) and Titman (1992) bad news about a borrower may arrive at the refinancing of a debt, causing investors not to extend credit or to raise the default premium on new debt. Diamond refers to liquidity risk as the risk of a borrower being forced into inefficient liquidation because refinancing is not available. Even if this extreme outcome is not realised, short-term debt can cause a loss of project rents if it has to be refinanced at an overly high interest rate because of credit market imperfection [Froot, Scharfstein, and Stein (1993)]. Firms may also experience dead-weight indirect costs of financial distress, for example a loss of customers and distraction of management, when they lose access to attractively priced credit.

b) Agency costs of debt: Myers (1977) argues that short-term debt reduces the potential for underinvestment caused by debt overhang because lenders and borrowers recontract before growth options are exercised. Barnea, Haugen and Senbet (1980) take the position that short-term debt reduces the incentive for risky asset substitution because short-term bond prices are insensitive to shifts in risk of the underlying assets.

This view of debt maturity, called the agency costs or contracting costs perspective, suggests that firms whose value derives to a larger extent from investment opportunities that are particularly sensitive to the degree of management effort and talent have an incentive to borrow short-term. Another view is that debt maturity choice can reduce agency costs between managers and equityholders. Long-term debt is almost always junior to short-term debt. Hart and Moore (1995) show that a firm can select an optimal amount of junior and senior debt to offset management incentive to invest in unprofitable projects.

c) Asymmetric information: In signalling models, investors infer private information held by borrowers from the debt maturity choice. Because short-term debt is less sensitive to underpricing, firms that have underpriced liabilities choose to issue debt of a shorter term to maturity and vice versa for firms with overpriced liabilities. In adverse selection models, private information is not revealed, and maturity is chosen to minimise the effect of private information on financing costs. The key insight of adverse selection models is that asymmetric information induces a bias towards short-term debt.

**Table 23.** : Maturity of debt for firms that restructured their claims successfully at the Johannesburg Stock Exchange and were re-instated and firms that were delisted after an unsuccessful debt restructuring.

	<u>Successful firms</u>				<u>Unsuccessful firms.</u>				p ratio
	Mean	Median	Min	Max	Mean	Median	Min	Max	
Long term debt	.274	.1904	.0034	.9288	.3817	.3730	.0170	.9076	.169093
Short term debt	.671	.823	.03334	1.089	.643	.621	.0921	1.2793	.335639

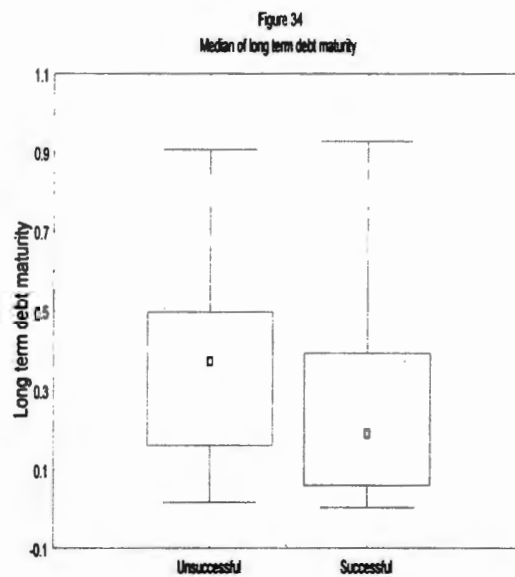
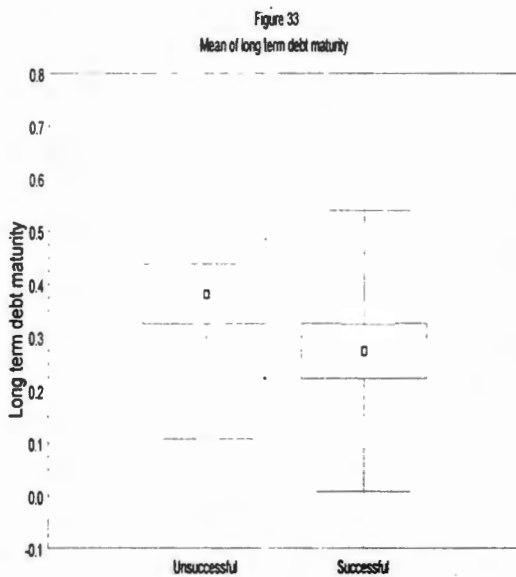
It appears from table 23 that successful firms are highly levered on a short-term basis with a mean ratio of 0.670 and the median value of 0.823 while unsuccessful firms have a mean of 0.643 and a median of .621. The difference in mean for the long-term debt indicates that the mean value for successful firms is 0.2734 and a median of 0.1904 and for unsuccessful firm the mean value is 0.3817 and 0.373 as a median value. The difference in means for the long-term debt maturity indicates that unsuccessful firms are highly levered on the long-term debt maturity, and their means and medians are higher than those of successful firms. However, this difference in mean is not statistically significant at a p level of 0.05.

## 8.1. Long-term debt maturity

### Sample results.

Table 24: Summary statistics of long-term debt maturity for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	26	23
Mean	.273963	.381688
Median	.19398	.373043
Standard error	.052033	.057152
Standard deviation	.265319	.274093
Quartile Range	.334532	.337707
Lower quartile	.059177	.159746
Upper quartile	.393709	.497453
T stat	1.396605	
P value	.169093	



The long-term maturity of debt is higher for unsuccessful firms than for successful firms. Results from Table 24 suggests that 38.2% of debt matures over a period of more than one year for unsuccessful firms and the median value of long-term debt maturity is 37.3 %. 25% of unsuccessful firms have a long-term debt maturity of 15.97% while 75% of unsuccessful firms have a long-term debt maturity of 33.77%.

Successful firms have a long-term debt maturity of 27.4%, and 50% of successful firms having a long-term debt maturity of 19.04%. Analysis of dispersion shows that 25% of successful firms have a long-term debt of 5.92% and 75% of them have a long-term debt of 39.37%. The difference in means is not statistically significant to conclude that there is a difference in servicing the long-term debt maturity of the subsample even if the mean and median of long-term debt maturity of unsuccessful firms is higher than the long-term obligations of successful firms.

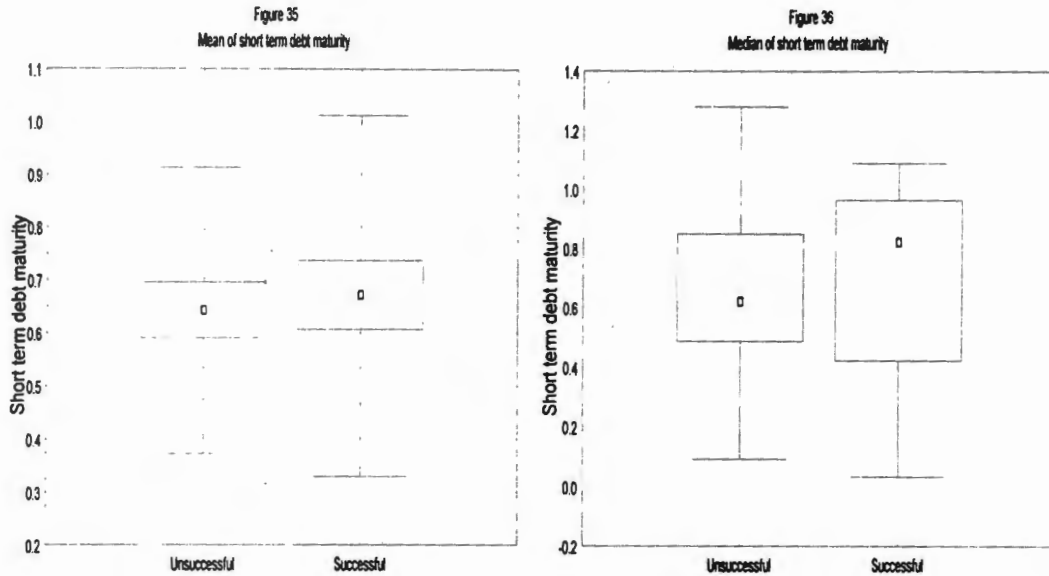
## 8.2. Short-term debt maturity

Diamond (1993) finds that the seniority and maturity of debt differs. Short-term debt tends to be senior, and long-term debt allows additional debt to dilute its value. Increased short-term debt leads lenders to liquidate too often. This model predicts that a greater proportion of short-term debt provide short-term lenders the incentives to remove the borrower from control or replacing the borrower with another manager. Asquith, Gertner and Scharstein (1991) provide some empirical support to Diamond's model. They find that generally short-term lenders do not make debt concessions outside the bankruptcy court when there is senior long-term debt in place. They also found that short-term lenders who delay defaults do so by diluting the value of junior claims. In a case study Baldwin, Mason and Hughes (1983) showed that high levels of short-term debt forced Massey Ferguson to quickly renegotiate a debt restructuring agreement with its creditors. The debt restructuring was followed by a sell of assets, employee layoffs and a discontinuance of operations.

### Sample results

Table 25: Summary statistics of short-term debt maturity for successful and unsuccessful firms.

	Successful	Unsuccessful
Count	27	26
Mean	.670954	.642752
Median	.822533	.620641
Standard error	.065742	.053069
Standard deviation	.341604	.270598
Quartile Range	.543747	.364269
Lower quartile	.420643	.484657
Upper quartile	.964390	.848926
T stat	-.332327	
P value	.741004	



Results in Table 25 suggest that successful firms have a higher mean and median of short-term debt maturity compared to unsuccessful firms. The mean value of short-term debt maturity is 67.1% and that 50% of successful firms have to pay 82,25% of their debt in a period of less than one year. Other measures of dispersion reveal that 25% of successful firms have a short-term debt maturity of 42.06% and 75% of them have a short-term debt maturity of 96.4%. Unsuccessful firms have a mean value of their short-term debt maturity at 64.28%. The measures of dispersion reveal that 25% of firms have a short-term debt obligations of 48.46%, 50% of unsuccessful firms have a median value of 62.06% of their short-term debt maturity and finally that 75% of unsuccessful firms have a short-term debt maturity of 84.89%. Successful firms present higher mean and median values for short-term debt than unsuccessful firms, but as in the case of long-term debt the difference in means is not statistically significant to conclude that there is a difference in the sub-sample debt service.

**Summary of chapter 8.**

Theoretical models link debt maturity to liquidity risk and screening, agency costs and asymmetric information. Liquidity risk may force a firm into inefficient liquidation because refinancing is not available. Results in chapter 5 (section 5.2.1) suggest that successful firms have more liquidity than unsuccessful firms. This is consistent with the suggestion of Barnea, Haugen and Senbet (1980) that firms with more investment opportunities have an incentive to have more short-term debt.

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## Chapter 9 Ownership Structure Characteristics

### Introduction

Several empirical studies report a change in ownership structure when a firm experiences poor performance or default on its debt [Gilson (1989, 1990), Cannella, Donald and Scott (1994)]. These studies follow the suggestion of Jensen (1989a,b) that leverage may be an important determinant on how decision rights in the firm are allocated among the claimholders. Because the impact of leverage or default on the allocation of these rights is not well understood, much of this section is devoted to an analysis of the changes in ownership structure between directors' and minority interests.

As suggested by Fama (1980), the viability of a large firm with diffuse ownership structure comes primarily from the disciplining force of managerial labour markets, both within and outside the firm. In the case of failing firms, Sutton and Callahan (1987) find that the stigma of bankruptcy threatens the career of any manager affiliated with such a firm. Several studies contend that the human capital of managers plummets in value when their firms experience extreme difficulties, regardless of their personal involvement.

Gilson (1989,1990) and Houston and James (1993) detect severe external labour market consequence for managers whose firms become financially distressed. Gilson (1989) finds that 52% of sampled firms experience management turnover when the

firms default on their debt, go bankrupt or privately restructure to avoid bankruptcy. A significant number of changes are initiated by firm's bank lenders. Following their resignation from these firms, managers are not subsequently employed by another exchange-listed firm for at least three years. Gilson (1990) identifies that, on average, only 46% of incumbent directors remain when bankruptcy or debt restructuring ends. Directors who resign hold significantly fewer seats on other boards following their departure. Common stock ownership becomes more concentrated, with large blockholders and less corporate insiders. Few firms are acquired. The results suggest that corporate default lead to significant changes in the ownership of firm's residual claims and in the allocation of rights to manage corporate resources. Houston and James (1993) corroborate Gilson's evidence by examining the relation between poor performance and CEO turnover in the commercial banking industry. Less than one third of the CEO's in their sample of financially distressed banks retained their jobs and only one out of 39 displaced CEOs acquired a similar post with another exchange-listed bank. They conclude that management-borne costs of poor performance in the banking industry are at least as great as those of other industries.

The disciplining force of the managerial labour market may come effectively from internal labour market. Coughlan and Schmidt (1985), Klein and Rosenfeld (1988), Warner, Watts, and Wruck (1988), and Weisbach (1988) all provide evidence consistent with effective internal labour markets by examining firm-specific circumstances that lead to managerial turnover. Blackwell, Brickley, and Weisbach (1994) provide evidence of a well-functioning internal labour market by showing that sub-unit performance measures are closely linked to internal promotions and turnover decisions. By ranking subsidiary banks within holding companies according to their

relative performance of return on assets, they show that the probability of turnover and demotion is much greater for managers from underperforming subsidiaries. In addition, the probability of internal promotion is much greater for managers from subsidiaries with high relative performance.

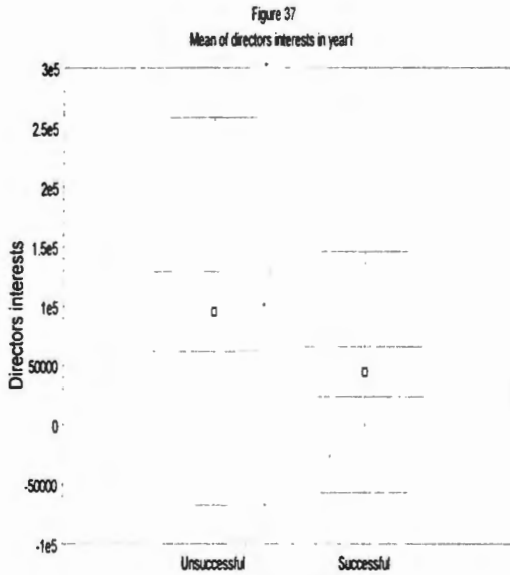
**Table 26:** Ownership structure between directors and minority interests for firms that successfully restructured their debt at the Johannesburg Stock Exchange and were reinstated and firms that delisted after an unsuccessful debt restructuring (in thousands of rands).

		<u>Successful firms</u>			<u>Unsuccessful firms</u>		
		Year1	Year2	Year 3	Year1	Year2	Year3
Directors' interests	Mean	44552.83	40440.81	65392.38	95476.52	98963.7	108090.9
	Median	(8076)	(11931)	(14435)	(30412)	(50654)	(38164)
Minority interests	Mean	20718.67	20694.5	22629.33	17676.45	168541.9	7373.75
	Median	(0.00)	(0.00)	(185)	(7906)	(10000)	(1625)

Results from Table 26 suggest that directors' and minority interests of successful firms are lower than those of their unsuccessful counterparts. The low level of directors' and minority interests may be related to size' as shown in section 5.1. The second observation is that the means directors' and minority interests in successful decrease in pre-distress year (Year 2) and regain substantially in distress year. This is not the case for unsuccessful firms, where directors' interests increase slowly from the first year to the distress year and the minority interests increase eight times in pre-distress year to decrease 22 times in the distress year.

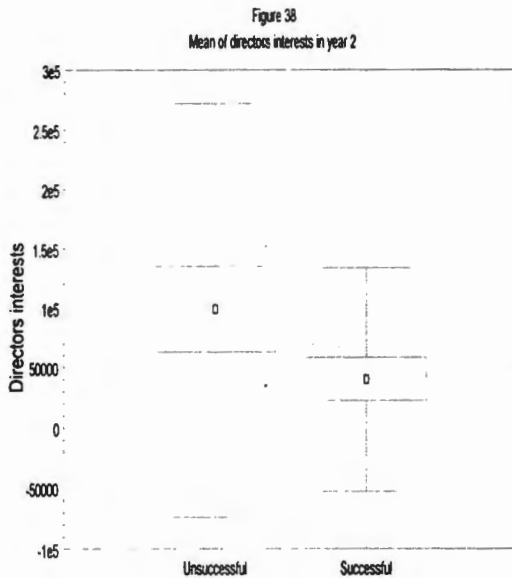
## 9.1. Directors' interests

### 9.1.1. Directors' interests from the pre-base year (year 1) to the base year (year 2).



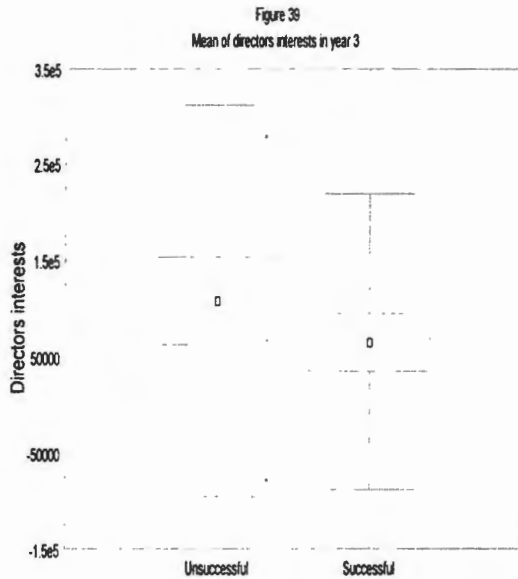
Results in Table 26 show that the directors' interests for successful firms decreased by 0.92% in the base year from 44552.83 to 40440.81 at the same time the median interests of directors increases by 47.7% form 8076 to 11931. The mean of directors' interests of unsuccessful firms increased by 3.66% from 95476.52 to 98963.7 and their median by 66.6% from 30412 to 50654 in the pre-distress year.

### 9.1.2. Directors' interests from the base year (year 2) to the distress year (year 3).



Results in Table 26 show that the mean of directors' interests increased by 61.7% from 40440.81 in the pre-distress year to 65392.38 in the distress year. The median interests of directors increased in the same period by 20.98% from 11931 in the base year to 14435 in the distress year. In the same period, the mean of directors' interests for unsuccessful firms increased by 9.22% from 98963.7 in the base year to 108090.9 in the distress year. Their median interests decreased by 24.47 % from the pre-distress year to the distress year.

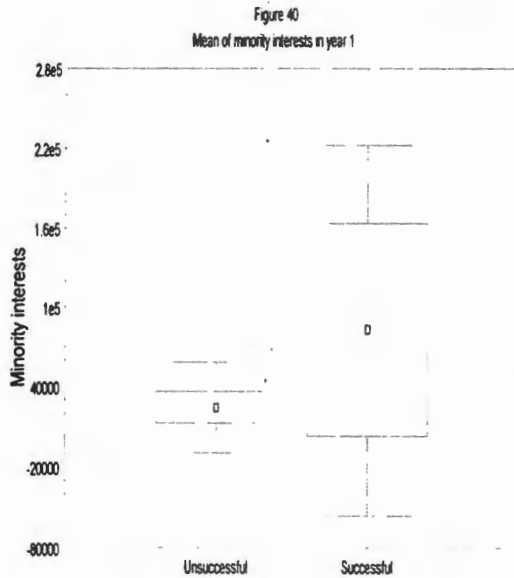
### 9.1.3. Directors' interests from the pre-base year (year 1) to the distress year (year 3).



Results from Table 26 show that the directors' mean and median interests increased on the onset of financial distress. Successful firms have a high increase in directors' interests, the mean of directors interests increased by 46.8% from 44552.8 in pre-base year to 65392.8 in the distress year. The median of directors interests increased by 78.7% from 8076 in the pre-base year to 14435 in the distress year. Unsuccessful firms directors interests increased for the same period from 95476.52 in the pre-base year to 108090.9 in the distress year, this represents an increase of 13.2% in their mean. The median of directors' interests increased from 30412 in the pre-base year to 38614 in the distress year, which represents an increase of 25.49 % for the period.

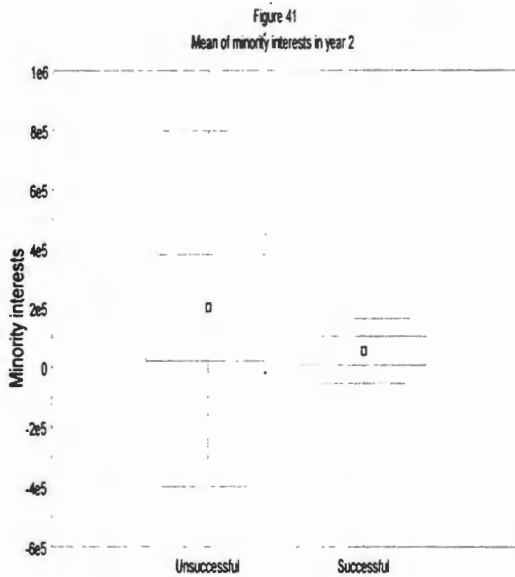
## 9.2. Minority interests

### 9.2.1. Minority interests from the pre base year (year 1) to the base year (year 2)



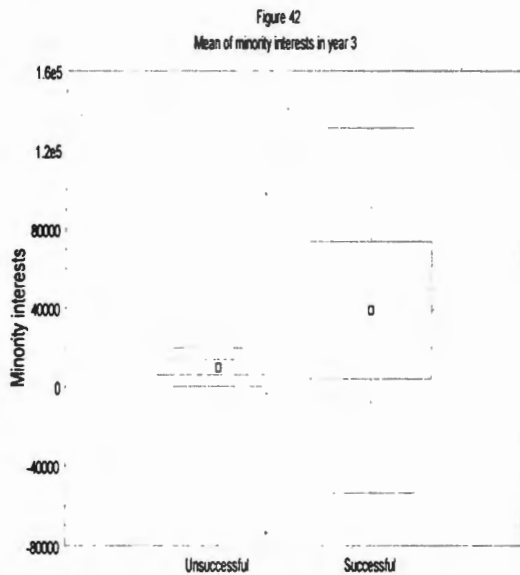
From Table 26, the minority interests for successful firms decreased by 1.16 % from the pre-base year to the base year and in absolute amount, their mean decreasing from 20718.67 to 22629.33. The median of minority interests did not change from zero, which means that only 50% of successful firms did have meaningful minority interests. Over the same period, the mean of minority interests for unsuccessful firms increased from 17676.45 in the pre-base year to 168541.9 in the base year, which represents an impressive increase by 8.5 times their initial interests. The median of minority interests increased by 26.49 % from 7906 in the pre-base year to 10000 in the base year.

### 9.2.2. Minority interests from the base year (year 2) to the distress year (year 3)



The minority interests of unsuccessful firms, although increasing by 8.5 times in the base year, decreased from that period to the distress year by 19 times the pre-distress level, that is from 168541.9 to 7373.75. Even the median interests of minorities decreased by six times the pre-distress level, from 10000 in the base year to 1625 in the distress year. During the same period, minority interests for successful firms increased by 9.35% from 20694.5 in the base year to 22629.33 in the distress year. At the same time, the median of minority interests increased and was greater than zero.

### 9.2.3 Minority interests from pre-base year (year 1) to the distress year ( year 3)



Results from Table 26 show an overall increase of minority interests for successful firms over the period, even though there was a decrease of 1.16% from year 1 to year 2. The increase from year 2 to year 3 is 9.35%, so that the increase in minority interests was 9.22% for the period of year 1 to year 3. The increase in the median of minority interests for successful firms is positive, from 0 in year 1 and year 2 to 185 in year 3. During the same period the interests of minorities decreased for unsuccessful firms by 58.3% from 17676.45 in year 1 to 7373.75 in year 3. The same applies to the median of minority interests for unsuccessful firms, which experience a drop of 79.46% from 7906 in year 1 to 1625 in year 3.

**Summary of chapter 9.**

This chapter analyses the change in ownership structure on the onset of financial failure. The study finds that during the distress period, the ownership interests of both insiders and outsiders increased for successful firms. For the same period, the study observes a small increase in insiders' ownership interests for unsuccessful firms, while outsiders' ownership decreased dramatically. This decrease can be interpreted as a loss of confidence in the viability of these economic entities.

## **Chapter 10 Conclusion**

### **Introduction**

The study analyses the incentives and mechanisms that govern corporate restructuring activities for a sample of failing firms that experienced poor performance and a decline in value on the Johannesburg Stock Exchange between 1986 and 1996.

The study attempts to analyse the hypothesis on the mechanisms to resolve corporate failure on the Johannesburg Stock Exchange. The original hypothesis states that firms with a higher market value/ replacement cost will be more likely to recontract their financial claims privately and preserve the going-concern value in assets sales and premature liquidations than firms with a lower Tobin's  $q$ .

Formally stated, the null hypothesis is:

Ho: There is no difference in the resolution of failing companies.

The following supplementary hypotheses attempt to analyse the patterns for reorganisation of failing firms.

h1: Larger firms compared by their book value of assets are likely to recontract easily because the larger the firm the lower its probability of liquidation.

h2: Firms that experience a substantial decline in cash flow performance and liquidity are likely to take actions that generate short-term cash flow. They also likely to recontract quickly to preserve their going concern value

h3: Firms that are highly levered are likely to recontract their claims because leverage acts as a catalyst for organisational change.

h4: Firms that are likely to recontract their claims are firms that invest, short-term, more fixed assets that can be pledged in a liquidation, and using more collateral, thus reducing the likelihood of liquidation.

h5: Firm that are likely to restructure their claims are likely to have more short-term debt that matures in less than year because short-term debt acts as an overhang.

h6: Firms that are likely to restructure easily are given a going-concern certificate by an increase in ownership structure of inside and outside claims.

The empirical study finds that successful firms that were delisted and re-instated on the stock exchange have a higher and statistically significant market replacement cost ratio, less bank debt and fewer creditors. The implication of these results is that South African corporate restructuring activities rely more on assets characteristics than financial characteristics.

### **10.1. Assets characteristics**

The study finds that failing firms with relatively high going-concern value measured by the ratio of market replacement cost, are more likely to restructure their financial claims and be re-instated on the Johannesburg Stock Exchange. This is because more of this going-concern value can be lost when the debt and the firm's operations are reorganised outside the mechanisms of the market that constitutes the stock exchange. The result is consistent with the argument of Jensen (1989a,b) that highly leveraged firms will default sooner if they are mismanaged. Firms with a high going-concern value are likely to restructure easily. Default in this case has the virtue of forcing the firm's investors to undertake corrective changes in corporate policy, thus preserving more of the firm's going-concern value.

### **10.2. Financial characteristics**

The hypothesis on financial characteristics developed in chapter 3 suggests that firms with more bank debt and fewer creditors are likely to restructure their financial claims easily because more bank debt and fewer creditors reduce the amount of information asymmetry and holdout problems between stockholders and creditors.

The empirical results of this study suggest that firms that restructured their claims successfully had less bank debt than unsuccessful firms. This result is not in contradiction with the prediction developed in chapter 3, where more bank debt reduces the information asymmetry and holdout problems. A possible explanation of this result is that in South Africa corporate contractual relationships are dominated by

pyramids and multi-tiered groupings with strong ties to institutional lenders. In addition, the legal and regulatory environment does not impose restrictions on institutional lenders from holding equity and debt in the firm's financial structure. This particular ownership structure gives outsiders the legal authority to watch over their capital more effectively, as argued by Jensen (1989a,b). The South African contractual relationship structure can lessen the free-rider problem and information asymmetry that are associated with corporate restructuring activities.

The study also finds that firms that restructured successfully had fewer creditors, by both mean and median. This result is consistent with the theory that suggests that where firms have fewer creditors, these creditors have stronger incentives to monitor the firm's activities. An effective monitoring mechanisms of the firm's activities by creditors has the benefit of reducing the information asymmetry and free-rider problems.

### **10.3. Additional tests**

Additional tests investigate different patterns that may arise to differentiate between firms that successfully restructured their claims and firms that were delisted from the Johannesburg Stock Exchange after an unsuccessful debt restructuring, between 1986 and 1996.

### 10.3.1. Controlling for size

The additional test finds that unsuccessful firms have statistically significant higher size as measured by the mean and median of the book value of assets. The implication of this result is that firms that successfully restructure their claims on the Johannesburg Stock Exchange tend to be smaller in size than unsuccessful firms. This result is consistent with the argument of Weiss (1990) that size is correlated with bargaining complexity. Larger size implies that, on average, more parties are involved in negotiations, making it more difficult for creditors to form workable coalitions resulting in larger equity deviations.

### 10.3.2. Controlling for liquidity and performance

Firms that restructured their claims successfully have higher mean and median cash flow liquidity measured by the current ratio. Results of cash flow performance measured by the average ratio of Ebit to total assets suggest that successful firms performed better than unsuccessful firms. However, analysis, year by year, of cash flow performance of the ratio of Ebit to total assets reveals that successful firms performed better in base year, but their cash flow performance deteriorated on the onset of financial failure, at the time when cash flow performance improved slightly for unsuccessful firms. This result is consistent with the argument of Jensen (1989) that firms experiencing a substantial decline in cash flow performance react quickly to preserve their going-concern value.

### 10.3.3. Controlling for leverage

Leverage as measured by the market to book ratio is marginally higher and statistically significant for successful firms. This result may be influenced by the higher market value of successful firms. Leverage as measured by the ratio of total liabilities to total assets shows that successful firms have a higher mean value and a lower median value. Each ratio may contain some measurement error in the sense that management may refer to some other ratio or variable when setting the firm's debt level. However, Titman and Wessels (1988) suggest that there is no reason to expect either of the two ratios to be a biased estimate of the true leverage ratio.

### 10.3.4. Controlling for financing of assets

The ratio of long-term debt to total assets is higher by the mean and the median for unsuccessful firms. Both successful and unsuccessful firms have the same level of mean for the ratios of short-term debt and fixed assets financing. The median values of short-term debt and fixed assets ratios are lower for successful firms.

### 10.3.5. Controlling for debt maturity

An additional test on controlling for debt maturity shows that unsuccessful firms have higher mean and median values of long-term debt than successful firms. The mean and median for short-term debt are for successful firms. This result is consistent with the empirical result of Baldwin, Mason and Hughes (1983) that suggests that high

levels of short-term debt forced Massey Ferguson to quickly renegotiate a debt restructuring with its creditors.

### **10.3.6. Controlling for ownership structure**

The study finds that directors' interests increased on the onset of financial failure for both successful and unsuccessful firms. The increase in directors' interests is very substantial for successful firms. During the same period, the interests of minority shareholders decreased substantially for unsuccessful firms. For successful the interests of minority shareholders increased substantially by their mean and median for the period.

## **10.4. Conclusion**

The empirical results suggest that the incentives and mechanisms of the South African restructuring activities rely more on assets characteristics rather than financial characteristics. These findings are consistent with the agency theory of debt for these reasons:

1. As argued by Jensen (1989a,b) highly levered firms default sooner if they are mismanaged. Firms with relatively high going-concern value are more likely to restructure easily and privately. Default, in this case, has the virtue of forcing the firm's investors to undertake corrective changes in corporate policy, thus preserving the firm's going-concern value.

2. The South African legal and regulatory environment has produced a particular contractual relationship where shareholders act as principal and agent [Gerson, Barr and Kantor (1985)]. This particular ownership structure may give equityholders few incentives to engage in wealth transfer policies. Jensen (1976) and Myers (1977) argue in their risk/ return notion that equityholders acting as agents may have little incentive to appropriate wealth from debtholders by making sub-optimal investment decisions that compromise debtholders interests. Sub-optimal investment decisions produce two effects. One is the transfer of wealth from debtholders to equityholders. The second is the decline in value of the firm, which may lead to default due to the cost associated with the sub-optimal nature of such investments. Debtholders who are aware of these incentives will require a higher return on their debt. Unsuccessful firms are more susceptible to this problem of opportunistic behaviour by debtholders.

These results suggest that the nature of the restructuring of failing firms is influenced by the distribution of claims among the firm's investors. The alignment of managers' and shareholders' interests, and the absence of restriction of institutional lenders from holding equity and debt in South Africa may lessen the agency conflicts between shareholders and managers and debtholders and shareholders, thus creating an incentive for investors to monitor actively the firm in which they invest.

### **10.5. Suggestions for future research**

While the findings of the study provide evidence on the importance of assets and financial characteristics in resolving corporate failure for listed companies on the Johannesburg Stock Exchange, they also raises some questions. Larger companies

have a lower liquidation value at bankruptcy but the findings of the study suggest that smaller firms restructure their claims more successfully. What is the relationship between size, assets characteristics and the nature of the external claims used for financing? Theoretical work in this area is not extensive and further work is needed.

The difference in debt maturity suggest that firms that restructure their claims have high short-term debt (that matures in less than a year). The question is how these firms respond to poor performance and a decline in value. Typical responses include assets restructuring, employee layoffs and management replacement. How and why delisted firms choose certain responses over others remains largely unexplored. The change in ownership structure characteristics suggests that in both case directors' interests increase while minority interests decrease for unsuccessful firms. The fact that many South African companies have a controlling shareholder is important here. What is the effect of such ownership claims on the restructuring process? These questions represent some useful areas for future research designed to gain a better understanding of the issues involved.

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