DETERMINANTS OF LEVERAGE AND AGENCY PROBLEMS

by

Abe de Jong and Ronald van Dijk*

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* Tilburg University and ING Investment Management, respectively. Correspondence to: Abe de Jong, Tilburg University, Department of Finance and CentER, P.O. Box 90153, 5000 LE Tilburg, the Netherlands, e-mail Abe.deJong@kub.nl. Part of the research has been conducted while Ronald van Dijk was affiliated with Erasmus University Rotterdam, the Netherlands. The views expressed in this paper are ours and not necessarily those of ING. The authors are grateful to Arturo Bris, Hans DeGryse, Uli Hege, Piet Moerland, Steven Ongena, Aswin van Oijen, Miguel Rosellón Cifuentes, Chris Veld, participants at seminars at McGill University and Tilburg University, and participants of the 1998 European Financial Management Meetings (Lisbon, Portugal) for providing many helpful comments. The usual disclaimer applies.

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Abstract

In this paper we empirically investigate the determinants of leverage and agency problems and we examine the relationships between leverage and agency problems. As in Titman and Wessels (1988) we use structural equations modeling with latent variables. In contrast to Titman and Wessels (1988), who employ data obtained from annual reports and capital markets, we use questionnaire data to measure firm characteristics. The questions concern the characteristics of the respondents' firms, including the presence of agency problems. We estimate the relations between these characteristics. The results confirm that the trade-off between tax advantages and bankruptcy costs determines leverage. We also find free cash flow and corporate governance characteristics as determinants of overinvestment. Despite findings that agency problems are present, direct relationships between leverage and four agency problems are absent.

Introduction

Theoretical arguments suggest that the debt-equity ratio is related to agency costs. A vast and rapidly growing literature deals with potential relations between this choice and agency problems. Three well-known predictions prevail. First, leverage aggravates agency conflicts between bondholders and shareholders. Frequently cited examples are the direct wealth transfer problem, the asset substitution problem and the underinvestment problem (see Smith and Warner (1979), Jensen and Meckling (1976), and Myers (1977) respectively). Second, leverage mitigates agency problems that arise from managerial behavior that conflicts with the interest of shareholders. A well-known example is the overinvestment problem (see e.g. Jensen (1986)). Finally, the relative amount of debt raises the costs of agency problems with stakeholders like customers and employees (see e.g. Titman (1984)). However, leverage is merely one potential factor in agency problems as the problems can be aggravated and mitigated by numerous factors. For example, the overinvestment problem is related to free cash flow, growth opportunities, leverage, and several corporate governance characteristics, such as bank relationships, threat of the market for corporate control, or managerial option plans. Shleifer and Vishny (1997) provide an overview of the versatility of governance structures.

We test agency theories within a framework of capital structure decisions. Our data and the empirical method allow us (1) to distinguish between tax or bankruptcy determinants of leverage and agency determinants; and (2) to distinguish between determinants of leverage and determinants of agency problems. We use a unique data set for listed firms in the Netherlands, that contains information on a broad range of firm characteristics. By means of a questionnaire we asked financial managers for their opinion about firm characteristics. The knowledge of these managers goes well beyond publicly available data and includes internal information, such as the presence of agency problems. Our analysis is based upon the results of questionnaires sent to the CFO's of the 168 non-financial firms listed on the Amsterdam Stock Exchange in May 1997. We received 102 useable questionnaires leading to a response rate of 61 percent. Because of the high response rate, the data are likely to represent the population of non-financial listed Dutch firms. Data extracted from responses of financial managers may suffer from subjectivity bias. Therefore, using questionnaire data should be seen as complementary to the use of accounting and stock market data. The trade-off is between the richer data set

obtainable from questionnaires versus the objectivity of publicly available data.

Previous empirical studies provide tests of the relevance of agency problems in a capital structure setting. Examples for US firms are Titman and Wessels (1988), Smith and Watts (1992), McConnell and Servaes (1995), and Lang, Ofek, and Stulz (1996). Rajan and Zingales (1995) study the determinants of capital structure for G-7 countries. Mehran (1992) and Berger, Ofek, and Yermack (1997) study the impact of governance characteristics on leverage. In these studies, leverage ratios are explained by empirical proxies for theoretical determinants. The studies test and confirm a trade-off between tax benefits and bankruptcy costs of debt. More interesting, competing determinants are derived from the agency theories. Several factors are expected to determine the presence of agency problems and consequently the leverage ratio. In existing empirical studies, it is assumed that direct relations between determinants of agency problems and leverage are caused by agency problems. This assumption creates an inference problem. For example, growth opportunities aggravate the underinvestment problem and increase the costs of leverage. Also, growth opportunities reduce overinvestment and thus the need for leverage. Finally, growth opportunities are risky and intangible assets that induce bankruptcy costs of leverage. These three hypotheses predict a negative relationship between growth opportunities and leverage. Smith and Watts (1992), McConnell and Servaes (1995), and Lang, Ofek, and Stulz (1996) confirm this negative relationship. But which theories are confirmed by this finding? The contribution of this paper is to discriminate between non-agency and various agency explanations of relationships between firm characteristics and leverage.

We study non-financial firms, listed on the Amsterdam Stock Exchange.[1] In the Netherlands corporate governance structures differ from those in the Anglo-Saxon setting, which constitutes the cradle of most corporate governance theories. A market for external corporate control is virtually absent, while in Anglo-Saxon countries hostile takeovers prevail (see Shleifer and Vishny (1997, p.756)). In the Dutch legal system firms are allowed to build up an array of technical takeover defenses.[2] But, the prerequisites for an effective internal or arm-length control system are in place. The prevalent mechanisms are a two-tier supervisory and management board, large shareholdings and long-term involvement of banks.[3] These devices are likely to be more effective as compared to the United States where a mixed-tier system is commonly in place and large shareholdings are rather uncommon (see Shleifer and Vishny

(1997, p.754)). As such, the typical Dutch corporate governance system represents a clear test whether leverage is a powerful instrument to mitigate the overinvestment problem in the presence of internal or arm-length control mechanisms. De Jong and Veld (1998) study debt and equity issues of Dutch firms and find that the entrenched managers choose to avoid debt. An analysis of the abnormal returns of announcements of issues shows that shareholders recognize the overinvestment problems in the managerial decisions.

We use questionnaire data and structural equations modeling with confirmatory factor analysis. The structural equations model describes the relationships between the variables in our model. The endogenous variables are leverage and the presence of four agency problems, i.e. direct wealth transfer, asset substitution, underinvestment and overinvestment. Each of these five endogenous variables is potentially determined by a wide set of exogenous variables and related to a subset of the other endogenous variables. As potential determinants of leverage the model includes variables for tax effects, bankruptcy costs, and product characteristics. As potential determinants of the agency problems the model includes proxies for debt contract specifications, growth opportunities, free cash flow, and corporate governance characteristics. The variables in our structural equations model are proxies of unobservable determinants that are derived from theory. The problem of unobservable determinants is an eminent issue in the empirical corporate finance literature.[4] In our model these latent variables are approximated in two steps. First, we obtain from financial managers scores on one or more questions concerning a determinant. Second, confirmatory factor analysis modeling is used to measure the latent variable by weighing the scores on the questions. This method allows us to reduce respondents' bias and to measure complicated and unobservable characteristics by asking several simple questions. It is important to notice that the method in this paper substantially differs from most existing studies in our field that use questionnaires. In previous papers the questions concern the relationships between firm characteristics, while in the present paper the relationships are estimated from the information about the characteristics.[5] An exception is Ang and Jung (1993), who test the pecking order hypothesis by comparing scores on questions for asymmetric information with the preferred marginal financing choices. The advantage of the adopted approach is that respondents' bias is minimized because the respondents are not asked to judge on the relevance of the theoretical relationships. Instead they answer questions about plain characteristics of their firms.

The main result of our study is that direct relations between leverage and agency problems seem to be absent. This does not imply that the agency problems are irrelevant. Other instruments than leverage affect agency problems. As expected, a positive relation between free cash flow and the overinvestment problem has been found. We find that takeover barriers intensify overinvestment, and that the presence of large shareholders increases the overinvestment problem. We also find that share ownership by managers aligns their interest with those of other shareholders and seems therefore an effective corporate control mechanism. With respect to non-agency determinants of leverage we find confirmation of the trade-off between tax advantages and bankruptcy costs. The results confirm the expected positive impact of the marginal tax rate and the collateral value of assets, and the negative influence of industry-specific risk. In addition, the results suggest that growth opportunities affect leverage negatively and that this effect is due to bankruptcy costs and not due to agency costs. We find no confirmation for the relevance of agency problems between shareholders and bondholders. Agency problems that stem from relationships with outside stakeholders are also not confirmed, because we find no relations between leverage and product uniqueness or the importance of quality.

The remainder of the paper is structured as follows. In Section I we describe capital structure theories and the resulting hypotheses. In Section II we explain the empirical model. In Section III we describe the data set. In Section IV we discuss the results. Finally, Section V concludes.

I. Capital structure theories and hypotheses

In the pathbreaking paper of Modigliani and Miller (1958) the debt-equity choice is irrelevant to the value of the firm. This proposition is derived under stringent assumptions and successive research describes factors that make capital structure decisions relevant. See for a comprehensive overview of the literature, for example, Harris and Raviv (1991). We briefly summarize the ideas behind the theories that we test in the present article. In addition, we mention and discuss empirical studies and we present the hypotheses that we use to test the theories.

A. Taxes, bankruptcy costs, and debt

Under the assumption of a capital market in which corporate taxation is the single market imperfection, Modigliani and Miller (1963) show that firms prefer debt financing if interest costs are tax-deductible. DeAngelo and Masulis (1980) claim that the actual impact of the deductibility depends on the existence of a crowding-out effect by non-debt tax shields. The empirical implications are that an increasing marginal tax rate positively influences the relative amount of debt and that non-debt tax shields reduce the benefits of debt. Using UK data MacKie-Mason (1990) approximates non-debt tax shields by tax loss carry forwards and investment tax credits. Graham (1996) uses similar proxies for the US and adds a simulated marginal tax rate. Graham, Lemmon and Schallheim (1998) also use a simulated estimate of marginal tax rates, but include a modification for cumulative measures of financing policy, i.e. levels of debt and leasing.

After Modigliani and Miller (1963) a line of research emerged in which direct and indirect bankruptcy costs are introduced. An increase of debt induces an increased probability of distress and eventually bankruptcy. Consequently, the relative amount of debt is expected to decrease with the failure probability and with the costs in case of financial distress or bankruptcy. In empirical studies failure probability is frequently approximated by the variance in earnings (e.g. Titman and Wessels (1988) and Graham, Lemmon and Schallheim (1998)) and by measures for size (e.g. Titman and Wessels (1988)). Bankruptcy costs are estimated by the inverse of a proxy for the collateral value of assets (e.g. Titman and Wessels (1988)).

B. Agency problems and debt

B.1 Shareholder-bondholder conflicts

In the shareholder-bondholder conflicts shareholders make decisions transferring wealth from bondholders to shareholders. However, the bondholders are aware of the situations in which this wealth expropriation may occur. Therefore, they will demand a higher return on their bonds. Shareholders, foreseeing the bondholders' reaction, can mitigate the potential conflicts. Three potential conflicts can be distinguished: direct wealth transfer, asset substitution, and underinvestment. In the case of direct wealth transfer conflicts, dividends are increased or debt

with higher priority is issued (Smith and Warner (1979)). In the case of asset substitution, the firm substitutes current projects for projects which have higher risk (Jensen and Meckling (1976)). As the bondholders are compensated given the risk of the current projects, wealth is transferred from bondholders to shareholders. In Myers' (1977) underinvestment problem, growth options will not be exercised because, due to the overhang of debt, the equity needed to finance these growth opportunities will not be provided by the shareholders. The shareholder-bondholder conflicts can be mitigated by adjusting the properties of the debt contract. This can take several forms. First, the contents of the debt contract can be adjusted by including covenants (Smith and Warner (1979)). For example, a covenant can contain restrictions on the payment of dividends or the disposition of assets. Second, debt can be secured by collateralization of tangible assets in the debt contract (Stulz and Johnson (1985)). Third, convertible debt or debt with warrants can be issued (Jensen and Meckling (1976) and Green (1984)). Fourth, the maturity of debt can be shortened (Myers (1977)).

The empirical studies related to the shareholder-bondholder conflicts mainly focus on the degree to which a firm can secure its debt and the firm's growth opportunities, both in relation to the relative amount of debt. In Titman and Wessels (1988) and Friend and Lang (1988) the relative amount of fixed assets is used to approximate the relative amount of secured debt, which is a potential mitigating factor of wealth distribution and asset substitution. Titman and Wessels find no significant relationship and Friend and Lang find confirmation for the expected positive relationship. However, it remains unclear whether this result is caused by agency problems or, for example, by decreasing bankruptcy costs. In Titman and Wessels (1988), Smith and Watts (1992), McConnell and Servaes (1995), and Lang, Ofek, and Stulz (1996) variables are used to approximate growth opportunities, which are hypothesized to aggravate underinvestment. The results are mixed, which is probably caused by the difficulty to measure growth opportunities from publicly available data. Titman and Wessels (1988) do not find the expected negative influence of proxies for growth opportunities on leverage, whereas Smith and Watts (1992) find the predicted effect. McConnell and Servaes (1995) and Lang, Ofek, and Stulz (1996) perform similar tests for a subsample of high-growth firms. The former study notices a significantly negative relationship between growth opportunities and leverage, while the latter finds no relationship. In these studies the properties of the debt contract that are mitigating factors of the underinvestment problem are not taken into account.

B.2 The shareholder-management conflicts

The conflicts between shareholders and management that stem from the separation of ownership and control are introduced by Jensen and Meckling (1976). The overinvestment problem of Jensen (1986) is a further elaboration of their theory.[6] According to the overinvestment hypothesis, managers have incentives to cause their firm to grow beyond the optimal size and to accept projects with a negative value to the firm. Jensen argues that overinvestment is aggravated by more free cash flow and less growth opportunities. The overinvestment problem can be mitigated by issuing debt and Jensen refers to this non-discretionary nature as the disciplining role of debt. Alternative mechanisms to control overinvestment exist. First, the managers' income can be made dependent upon the performance of the firm. This can be accomplished by means of managerial shareholdings or option plans, or by compensation schemes. Second, internal and external corporate control mechanisms may mitigate overinvestment. The internal control mechanisms include monitoring by the board, large shareholders, or banks. An example of an external control mechanism is the market for corporate control, which is characterized by hostile takeovers.

Several empirical studies examine the overinvestment problem by analyzing the relationship between growth opportunities and free cash flow on the one hand, and leverage on the other. Smith and Watts (1992) do not differentiate between overinvestment and underinvestment and find the predicted negative relationship between debt and growth opportunities. McConnell and Servaes (1995) amend the test by examining the overinvestment hypothesis for a sample of low-growth firms, and include managerial shareholdings as a mitigating factor. They conclude that the results confirm the overinvestment hypothesis. In the study of Lang, Ofek, and Stulz (1996) the overinvestment hypothesis is also tested for a sample of low-growth firms, and a proxy for the availability of free cash flow is included. In line with the overinvestment hypothesis, a significantly negative relationship between debt and proxies for growth opportunities is found. Mehran (1992) and Berger, Ofek, and Yermack (1997) test the influence of governance characteristics on leverage. Both studies find that alignment of interest, through managerial shareholdings and option plans, induces leverage. As a result of monitoring, the presence of large shareholders is found to increase leverage. Similarly, relationships with banks induce leverage.

B.3 Conflicts with outside stakeholders

Titman (1984) and Maksimovic and Titman (1991) study the relationship between the capital structure choice and outside stakeholders. Titman (1984) argues that the liquidation of a firm may impose costs on the customers and employees. As a result they demand risk premia on products and wages. These costs are transferred to the shareholders. However, if the shareholders would commit to liquidate only when the gains exceed all costs, including those of customers and employees, this would increase the cost of capital. Titman shows that capital structure can be used to control these risk premia and argues that firms with higher liquidation costs to customers and employees will have less debt. Titman and Wessels (1988) have investigated the relationship between uniqueness and leverage. The expected negative relationship is found.[7] Maksimovic and Titman (1991) argue that firms with products with low liquidation costs to customers are also subject to a similar interaction. Firms that require a reputation for producing high quality products are expected to have less debt.

C. Summary of the hypotheses

In Table I we summarize our discussion. The table gives the endogenous relations between leverage and agency constructs.

[Please insert Table I here]

In addition, it shows the exogenous determinants of leverage and of agency problems. To facilitate the exposure, theories of similar character are in the first column combined in five main groups, i.e. tax effects, bankruptcy costs, shareholder-bondholder conflicts, shareholder-manager conflicts and conflicts of managers and other stakeholders. Firm characteristics are also mentioned in the first column. For example, tax effects are divided into the (forward-looking) marginal tax rate and the non-debt tax shields. The hypothesized directions of causality between leverage and other firm characteristics can be obtained from the second and third column. A characteristic can be a determinant of leverage in a direct or in an indirect way. The latter situation occurs when a characteristic is a determinant of an agency problem while that agency problem is a determinant of leverage. In the second column the hypothesized relationships between leverage and its direct determinants are mentioned. For example, tax-

related theories hypothesize that leverage is positively affected by the marginal tax rate. Similarly, leverage is expected to be positively influenced by the overinvestment problem. The hypotheses concerning the relationships between agency problems and their determinants are given in the third column. For example, the hypotheses are that the direct wealth transfer problem is negatively affected by covenants and secured debt. In the shareholder-bondholder conflicts leverage is a determinant of agency problems, for example due to the overhang of debt in the underinvestment problem. It is important to notice that the table reports the direction of causality between leverage and the agency constructs as suggested by the initial theories. Specifically, theory suggests that firms with a before-financing overinvestment problem will use relatively more debt as a disciplining device. The table reports a positive influence of the overinvestment problem on leverage. Despite this straightforward prediction of an one-way causal relation, empirically testing is difficult because a purely before-financing overinvestment problem is practically unmeasurable. In our empirical examination we also test for two-way relations.

II. The empirical model

The two most distinguishing characteristics of the theoretical framework in this study are the complex set of potential relations and the presence of unobservable characteristics. To examine this framework empirically, we employ a model that consists of two submodels. The first submodel is a *measurement model* that measures unobservable characteristics or latent variables by combining observable data or indicators. The second submodel is a *testing model* that describes the set of potential relations among the latent variables. The submodels interact and contain parameters that are unknown to the researcher. Anderson and Gerbing (1988, 1992) and Lance, Cornwell, and Mulaik (1988) advocate to apply a two-step approach to estimate the parameters. In the first step confirmatory factor analysis is used to measure latent variables. The confirmatory factor analysis estimates the relationships between observable indicators and latent variables. The approximations are based upon a weighted average of the indicators. Tests can be carried out to examine the quality of these approximations. In the second step a testing model is estimated to test the hypothesized relationships between the latent variables. As an alternative to the two-step approach, a one-step approach can be used in

which the measurement model and the testing model are estimated simultaneously (see Bollen (1989) and Jöreskog and Sörbom (1989, 1993)).[8] Compared to the two-step approach, this one-step approach has a number of drawbacks. First, the one-step approach requires a sufficient fit of the data with respect to the theoretical model. In case of insufficient fit, the model has to be adjusted towards the data. The goal of the procedure is then not to test a hypothesis, but to describe the data by a model (Cliff (1983)). Second, incorrect specifications influence all estimates in the one-step approach. In the two-step approach the measurement model can be evaluated before the testing model is estimated, and this latter model can be evaluated separately (Anderson and Gerbing (1988)). Third, simultaneous testing induces interpretational confounding, which means that a latent variable is given different empirical meaning than would have been given by an individual before estimating unknown variables (Anderson and Gerbing (1988)). Fornell and Yi (1992) mention a drawback of the two-step approach, which is that the two steps are not independent. Modifications in the first step affect the second step. In a reply, Anderson and Gerbing (1992) convincingly argue that the specifications in both steps are not arbitrary if they are driven by theory.

An investigation of Table I leads to two additional requirements of an appropriate elaboration of the two-step approach. First, the presence of several dependent variables requires a structural equations model. Second, the source of the data has to be selected appropriately. The measurement model includes divergent firm characteristics. The data for most characteristics cannot be obtained from the firms' annual reports or from stock market data. If not impossible, it is very difficult to measure, for example, agency problems or internal control mechanisms from these sources. We use questionnaire data to provide indicators to measure latent variables. For each latent variable in our model we ask CFOs one, two, or three questions. The answers to these questions jointly measure a characteristic. The advantage of questionnaire data is that they are designed to approximately describe each characteristic. Drawbacks of questionnaire data are that different interpretation of the questions among respondents may occur, that concepts may not be fully and equally understood, and that managers give social desirable answers. In order to mitigate these drawbacks, we use of simple and homogeneous[9] questions. Moreover, the questionnaire is anonymous.

A. The measurement model

In the measurement model the questionnaire data provide the indicators that are used to measure the latent variables. Confirmatory factor analysis is used to measure the relation between the indicators and the latent variable (see Bollen (1989) and Jöreskog and Sörbom (1989, 1993)). The confirmatory factor analysis model is

$$x = \Lambda_x \xi + \delta, \tag{1}$$

where x is a vector of q indicators, ξ is a vector of s latent variables, Λ_x is a matrix of factor loadings that relate the latent variables to the indicators, and δ is a column vector of measurement errors. The correlation matrix Σ for the indicators is

$$\Sigma = \Lambda_x \Phi \Lambda_x' + \Theta_\delta, \tag{2}$$

in which Φ and Θ_δ are the covariance matrices of ξ and δ, respectively. The confirmatory factor analysis estimates Σ, such that the fit between the sample correlation matrix S and Σ is maximized according to a distance function which, in general, can be interpreted as a maximum likelihood criterium.[10]

We apply confirmatory factor analysis on separate submodels, each consisting of a set of indicators measuring one or more variables. The choice of variables included in each model is based upon two considerations. First, according to the 'two-indicator rule', for a submodel to be identified, it is necessary to include two or more latent variables in case not more than two indicators are related to a latent variable (see Bollen (1989, p.244)). Second, latent variables have to be correlated, such that indicators of variables may attribute to the measurement of other latent variables. As an approximation of the unobservable characteristics, we estimate the factor scores between the indicators and latent variables. These factor scores for each of the indicators are multiplied by the scores of the respondents on the indicators, to obtain the values for the latent variables.[11] Missing values in the indicators are replaced by the average of the scores of other respondents on the indicator.[12]

In order to evaluate the measurement models, we calculate the fit of each of the models and measures for the validity and reliability of the latent variables (see Bollen (1989)). The model fit is assessed by the adjusted goodness-of-fit index (AGFI) and the root mean squared residual (RMSR). The AGFI is an indication of the covariance in the data that is explained by the estimated model, with the degrees of freedom taken into account. The maximum value is one and the minimum is zero. The RMSR is a measure of the average variance of the residuals. The

value is between zero and one, with a better fit for values closer to zero. While AGFI and RMSR measure the fit of a model, the validity and reliability of indicators and latent variables can also be investigated. A validity statistic indicates whether the indicator or latent variable measures what it is expected to measure. The validity of indicator *i* for latent variable *j* is measured by the *t*-value of the estimate for λ_{ij}, which is the *i*,*j*th element in Λ_x. The validity of a latent variable *j* is based on the total variance extracted, and can be calculated as $(\Sigma\lambda_{ij})^2/((\Sigma\lambda_{ij})^2+\Sigma\delta_{ij})$, where *i* runs over all indicators of the latent variable *j*. The reliability tests show whether the results can be duplicated with similar data and procedures. The reliability of an indicator is the R^2, i.e. the variance in the indicator that is accounted for by the latent variable. R^2 is the squared correlation coefficient of a regression with the indicator as a dependent variable and the construct as independent variable. To measure the reliability of a latent variable *j* from the factor loadings, we calculate $(\Sigma\lambda_{ij}{}^2)/((\Sigma\lambda_{ij}{}^2)+\Sigma\delta_{ij})$, where *i* runs over all indicators of the latent variable *j*.

B. The testing model

In this subsection we describe how we estimate the relations among leverage, the agency problems and their respective determinants. From the hypotheses in Table I we derive a system of equations that describes the expected relationships. We have five equations, which are shown Table II.

[Please insert Table II here]

In the first column the explained variables of each of the five equations are given. In the second column the explanatory variables are mentioned. The endogenous variables are in italics. The system of equations is obtained by interpreting economic theory. Note that in this system the number of parameters is relatively large. Theory provides potential determinants, however, the model is likely to be too general. In order to obtain a more parsimonious model that fits the data, we use a single-equation method. Such a method is used to estimate a system of equations by estimating each equation separately. In small samples it is a useful alternative to a full-information method, because the method is less sensitive to the presence of estimation problems such as multicollinearity, errors in variables, and misspecification. For this purpose, we can use the Ordinary Least Squares estimator since the model is a recursive system, which

is one in which there is a unidirectional dependency among the endogenous variables. The equations can be ordered such that the first endogenous variable is determined only by one other endogenous variable and exogenous variables, the second determined only by the first two endogenous variables and exogenous variables, and so forth. Because there are no lagged endogenous variables in the system, the Ordinary Least Squares estimator is not only consistent, but also unbiased.

In the single-equation context we simplify each equation until all parameter estimates have absolute *t*-values that exceed a particular constant. Following suggestions in Haitovsky (1969), this is done by a series of estimations and *t*-tests, which we call the specification process. The first estimation model includes all variables. After the first estimation round the variable that has the lowest absolute *t*-value for its parameter estimate, is eliminated from the model. The resulting smaller model is re-estimated and a similar elimination procedure follows. The estimations and eliminations are stopped as soon as all *t*-values are larger in magnitude than the specified value. The constant in the model is, of course, never eliminated in this process. The single-equation method and the subsequent specification process lead to a relatively small system of equations than can be estimated by a full-information method. This estimation approach will lead to more efficient parameter estimates than those obtained in the single-equation context. The system includes among the explanatory variables the endogenous variables that are also present in the most general model and the exogenous variables that were not eliminated in the specification process.

III. Data set

The firms in our data set are Dutch, non-financial firms that were listed on the Amsterdam Stock Exchange in April 1997. In order to describe the Dutch institutional setting we collected data on the firms in our data set from alternative sources. We use a data set of the Dutch Central Bureau of Statistics (1997) that includes annual report data over 1996. We use an annual overview of blockholdings per April 30th, 1996, from *Het Financieele Dagblad* (the Dutch financial daily). By Dutch company law blockholdings have to be announced if they exceed the 5% level. From *Jaarboek Nederlandse Ondernemingen 1995/1996* we obtained the

names of the firm's officers as of July 1996. Also the officers of Dutch banks are included in this book, which allows us to find board members of banks that are also board members of other firms. From the *Gids bij de Prijscourant van de Amsterdamse Effectenbeurs 1996*, which is issued by the Amsterdam Stock Exchange, we collected data on the legal structure of the shares. In Table III we provide summary statistics of the firms.

[Please insert Table III here]

In Table III we find that, measured in book values, the average long-term debt ratio in 1996 is 12.8%.[13] Using market values it is 9.5%. In the Netherlands firms have relatively concentrated ownership, as on average 41.1% is owned by the three largest shareholders. Firm-bank relationships are emphasized by the finding that 24% of the firms have a board member, who is also a board member of a bank. Almost half of these firm have an accompanying equity stake owned by the bank. Takeover defenses are broadly used by Dutch firms. In general, priority shares, which 37.9% of the firms have, are a small number of shares that carry superior voting rights, e.g. with regard to takeover attempts. The 60.4% of the firms that have preferred shares, have an arrangement which allows an issue of preferred shares without further approval of shareholders and for which only 25% of the nominal value has to be paid up. In case of a takeover attempt, the firm can place these shares with a befriended party and have the shares paid with a loan. The dilution creates an effective takeover defense. Depository receipts are used by 37.2% of the firms. For these firms, shareholders own receipts which only carry the cashflow rights. The voting rights remain with a trust that owns the shares and issued the receipts. Finally, 7% of the firms have limited voting power, which is normally 1%. This implies that shareholders can have a maximum of 1% of all votes, irrespective of the number of shares they possess.

Our initial sample consists of 168 firms. We aimed to have the questionnaire filled in by the firm's CFO. We started by contacting each firm by telephone to obtain the correct address and the name of the CFO. If the name of the CFO could not be found, the questionnaire was sent to the CEO. The questionnaire was completed anonymously. We ensured anonymity by using separate return envelopes for the questionnaire and the form for the respondents name, position, and address to obtain the results of the research.[14] In order to maximize the response

a cover letter informed the recipients about the research project, that responses would kept anonymously and that the completed questionnaire would be kept in total confidence. Moreover, a research report was promised to those who filled in the separate form containing information on the respondent. The questions deal with firm characteristics of which we expect the respondent to have sufficient knowledge about. We use words which are understood and used by the respondents. We avoid indistinct concepts and provide definitions if necessary. In April 1997 we sent the questionnaires to the firms on the mailing list.[15] In May we sent follow-up questionnaires excluding the firms from the mailing list that had requested to be informed about the results. In total, 102 questionnaires were returned.[16] This is a response rate of 61%. This rate compares favorably with response rates on other surveys. Scott and Johnson (1982) and Pinegar and Wilbricht (1989) have response rates of 21% and 35%, respectively. For the 102 questionnaires and the 37 questions we have used, the percentage of missing values is 1.07%. The surveys were sent back within three months from the first mailing. Thus, the surveys were completed in the same time frame and the answers are not biased by differences in the economic environment.

IV. Results

A. Results of the measurement models

In the first step of our analysis we measure the latent variables from the questionnaire data. The results are presented in Table IV.

[Please insert Table IV here]

In the first column the eight measurement models that we have estimated are mentioned. They are indicated by the symbols *A* through *H*. In the second column the latent variables in each model are mentioned. The third column gives the indicators, i.e. brief descriptions of the questions in the questionnaire. The fourth column provides the average and standard deviations of the scores on the individual questions. The first three columns show that two latent variables are measured by three indicators (free cash flow and covenants), that five latent variables are

measured by two indicators (non-debt tax shields, firm-specific risk, growth opportunities, asset substitution, and underinvestment), and the remainder of the latent variables determines one indicator.[17] No indicator is related to multiple latent variables. Latent variables that are heterogeneous are related to two or three indicators, each measuring a homogeneous aspect of the variable. For example, a firm's non-debt tax shield consists of carry forwards and depreciation. Most of the heterogeneous variables were found to determine the related indicators.[18] The estimated coefficients are in the fifth column. All *t*-values are significant at the 5% level and λ_i in every case has the expected sign. The measurement errors are in the sixth column. The reliability of the indicators is in the seventh column. The R^2's show that the reliability of the indicators is acceptable. The AGFI and the RMSR assess the fit of the models, and are presented in Table V.

[Please insert Table V here]

The AGFI (in column 3) shows that the fit of the models is good, as a large part of the covariance in the data is explained by the model. The RMSR (in column 4) is also good, because the variance of the residuals that is not explained by the model is small. The validity and reliability of the latent variables are presented in columns 5 and 6. It can be concluded that all latent variables have an acceptable reliability. The validity is reasonable given the fairly small number of indicators for the variables. As a result of the measurement model, for each firm, estimates of the latent variables for each firm are obtained by multiplying the indicators with their respective estimated scores.

B. Results of the testing model

In the second step of our analysis we measure the relationships between the latent variables. Before we discuss the results of the regressions, we investigate the correlations between the latent variables. The correlations are given in Table VI.

[Please insert Table VI here]

Particularly interesting are the correlations among the agency conflicts. A positive correlation

exists between the shareholder-bondholder conflicts. The correlation between wealth transfer with dividends and asset substitution equals 0.70. The correlation between asset substitution and underinvestment is 0.50 and the correlation between wealth transfer with dividends and underinvestment is 0.46. Interesting is the negative correlation between underinvestment and overinvestment (-0.40), which confirms the contrarian nature of these problems. The correlations between wealth distribution with debt seniority and the other agency problems are not significant at the 1% level.[19] Furthermore, the nature of growth opportunities, i.e intangibility and uncertainty, is accentuated by the negative correlation with the collateral value (-0.75) and the positive correlation with industry-specific risk (0.47).

In the testing model we initially estimate single-equation models. The variables in each of the models are described in Table II. We standardize each variable by dividing it by its standard deviation. This transformation aids the interpretation of the coefficients, as all variables are denominated at the same scale. It allows to access the relative effects on a regressand of changing each of the variables one standard deviation. Initially, we exclude endogenous constructs from the independent constructs. We use the results to build a structural equations model. The Ordinary Least Squares estimation results of the single-equation models are presented in Table VII.

[Please insert Table VII here]

In Panel A determinants of leverage are uncovered. Leverage is defined as the ratio of the book value of long-term debt and the book value of the firm's total assets. In the left column the variables are given. In column *1* the results of a regression with all variables is shown. Between parentheses are the *t*-values. Columns *2* and *3* show the results of the regression models are given that include only variables with parameter estimates that are significant at the 10% and 5% level, respectively. The more parsimonious models are obtained after applying a stepwise elimination procedure. The last row of Panel A contains the adjusted coefficients of determination, R^2.

The results for the determinants of leverage show strong confirmation of the non-agency trade-off model. First, the results suggest that the marginal tax rate has a positive impact on

leverage. Moreover, the hypothesis that collateral value is positively related to debt, is confirmed by the data. This suggests an inverse relationship between bankruptcy costs and leverage. Also, the coefficient for industry-specific risk is significant at the 10% level, which suggests that an increasing bankruptcy probability affects leverage negatively. Our results are similar to the results of Rajan and Zingales (1995) for the G7-countries. They use proxies for collateral value and size, which are found to be positively related to leverage. Although Titman and Wessels (1988) do not find significant results for the relationship between leverage and tangibility or volatility, the signs of the estimates generally confirm the trade-off. In our model, no confirmation is found for the hypotheses concerning non-debt tax shields, uniqueness, and importance of quality. In contrast with our findings, Titman and Wessels (1988) find a significantly negative relationship between uniqueness and leverage.[20] The importance of quality does not seem to matter. We are not aware of other empirical studies in which the relationship between importance of quality and leverage is tested. Investigating the R^2 shows that the explanatory power of the models is relatively high, with R^2's ranging between 0.28 and 0.30.

In Panel B the results for the determinants of the agency problems are described. The regressions in which the shareholder-bondholder agency problems are the dependent variables lead to the conclusion that in our sample the determinants hardly have any explanatory power. The wealth transfer problem of paying excess dividends is positively related to covenants at the 5% level. This result contrasts with the hypothesis. For the wealth transfer problem concerning the seniority of debt no significant coefficients are found. The asset substitution problem has a significantly positive relationship with covenants at the 5% level. Similar to the wealth distribution problem with dividends, this finding contrasts with the hypothesis. If we consider the expected sign of the estimated parameters of these three models, the hypothesis is that they are all negative (except the intercept). Although insignificant, the hypothesis is confirmed only in two cases, both regarding convertible debt. In line with these findings, the R^2's show that the explanatory power for these determinants is very low. We conjecture that the high level of entrenchment of the management and the relatively low managerial shareholdings cause the absence of agency conflicts between shareholders and bondholders. Shareholders need to persuade the management to expropriate wealth from bondholders, but the management has neither the incentives nor feels the pressure to do so.

In the empirical literature much attention is paid to the underinvestment problem, and the emphasis is on the role of growth opportunities. Growth opportunities are hypothesized to aggravate underinvestment. On the other hand, several properties of the debt contract may mitigate underinvestment. In our results, only the hypothesis that increasing short-term debt mitigates underinvestment is confirmed at the 5% level. In contrast with our expectations, covenants are found to be positively related to the underinvestment problem. A remarkable result in our analysis is that the parameter estimate of growth opportunities is insignificant and negative. These findings contrast with Smith and Watts (1992) and McConnell and Servaes (1995).

The final regressions in Panel B deal with the overinvestment problem. This agency problem between managers and shareholders is expected to be aggravated by free cash flow. The results confirm Jensen's (1986) ideas that overinvestment is positively affected by free cash flow. A similar result is obtained by Lang, Ofek, and Stulz (1996). Our analysis provides interesting information about the mitigating factors. First, no confirmation of the mitigating role of growth opportunities is found. In contrast, Smith and Watts (1992), McConnell and Servaes (1995), and Lang, Ofek, and Stulz (1996) confirm the mitigating role of growth opportunities. Second, the results show strong confirmation of the expected negative impact of managerial shareholdings. For performance-based income the result is again negative, but insignificant. It is remarkable that the coefficient for option plans is positive and relatively large in magnitude. This indicates that options do not align the interests of managers and shareholders, as they may aggravate overinvestment. Further investigation about the nature of the option plans learns that often option are exercised within three years and that the structure is fiscally driven. Mehran (1992) and Berger, Ofek, and Yermack (1997) find that both managerial shareholdings and option plans increase leverage. The latter finding may be due to a tendency of managers with options to increase risk by leveraging. Third, the less the firm is exposed to the market for corporate control, the larger the overinvestment problem. This result was expected and is due to the effectiveness of the technical takeover defenses that characterize the Dutch institutional setting. Finally, the role of banks shows to be insignificant and a positive relationship between block holdings and overinvestment is found. This result indicates that arm-length and internal monitoring do not reduce or even induce overinvestment. The finding that blockholdings induce overinvestment has three potential reasons. First, blockholders that were expected to

monitor the management are passive monitors and a threat to sell the sales may be implausible due to liquidity costs. Second, blockholders actively force the management to engage in projects with negative value to all shareholders, but with a positive value to blockholders. As Becht (1997) argues, strong blockholders may squeeze weak minority shareholders. Third, blockholdings serve as takeover barrier, because blockholders may have strategic interests and do not allow rival firms to take over the firm. This argument is supported by Kabir, Cantrijn, and Jeunink (1997), in which a negative relation between technical takeover barriers and blockholdings is reported for the Netherlands. In contrast with our findings, Mehran (1992) and Berger, Ofek, and Yermack (1997) find evidence on effective monitoring by large shareholders in the US. The relevance of the model is reflected by R^2's that range from 0.16 to 0.22.

The results that have been discussed so far present strong confirmation for the taxes/bankruptcy trade-off model to determine leverage. Although we have analyzed the structure of the agency problems that are related to debt, we have not yet tested the impact of these problems on leverage. In order to do this, we define a structural equations model. Hence, this model includes two types of latent variables that are related to leverage, i.e. agency problems and the constructs from the taxes/bankruptcy trade-off model that have significant parameter estimates. The requirement for an agency problem to be included in the structural equations model is to have acceptable explanatory power from the exogenous variables. In our model we include underinvestment and overinvestment, and the exogenous variables of these investment problems that have significant parameter estimates.[21] An exception is the inclusion of growth opportunities. To enable a comparison of our model with existing empirical studies this variable is included.

The results of the structural equations model are presented in Table VIII.

[Please insert Table VIII here]

The structural model shows that the conclusions related to the taxes/bankruptcy trade-off model do not change if the underinvestment and overinvestment problems are allowed to affect leverage. The parameter estimates for the marginal tax rate and collateral are similar to the

estimates in the single-equation context. Also the determinants of the agency problems remain unchanged if the 10% significance level is applied. An interesting result in Table VIII is the measurement of the overhang of debt in the underinvestment problem. Myers' (1977) hypothesis predicts a positive sign, but the parameter estimate for leverage is insignificant at all conventional significance levels. Another interesting finding is the estimate for the disciplining role of debt. Jensen (1986) predicts a positive relationship between overinvestment and leverage. The results are, however, insignificant at all conventional significance levels. This finding confirms the results of De Jong and Veld (1998), who study incremental debt-equity decisions and find that overinvestment is relevant but not related to the disciplining role of debt. Our results also suggest that the relationship with growth opportunities is insignificant for both agency problems. This result is interesting, because in existing empirical studies these agency problems are often found to be present. Examples are Smith and Watts (1992), McConnell and Servaes (1995), and Lang, Ofek, and Stulz (1996). It seems puzzling that in these studies the underinvestment and overinvestment are found to be relevant in explaining the firms debt ratios. A potential explanation is that they employ a reduced-form analysis in which the relationship between leverage and growth opportunities is estimated without modeling agency problems and bankruptcy costs explicitly. Note that the costs are increased by growth opportunities, which are in general noncollaterizable and risky assets. In our framework we are able to disentangle the effects that growth opportunities have on underinvestment, overinvestment and bankruptcy costs.

V. Conclusions

In this paper we use questionnaire data and confirmatory factor analysis with structural equation modeling to investigate the relevance of agency theories. We measure the relationships between leverge and agency problems and the determinants of leverage and agency problems, for a data set of Dutch listed firms. The use of questionnaire data allows us to include variables that are only available from internal sources. We are able to construct good approximations of theoretical determinants, which allows a powerful and unique examination of determinants of leverage and agency problems. We can explicitly include agency problems in the empirical specification of the model.

The institutional setting in the Netherlands is interesting, because firms can protect themselves with technical takeover defenses from the disciplinary forces of the threat of hostile takeovers as an external control mechanism. Therefore, overinvestment is potentially relevant and the Dutch setting offers a unique case to test the influence of this agency problem. It is an empirical question to what extent this problem is alleviated by the disciplining role of leverage or by alternative corporate control mechanisms.

In this paper, we show that the level of leverage in the Netherlands is largely determined by factors from the taxes/bankruptcy trade-off model. On the one hand, the expected effect of tax benefits is confirmed as leverage increases with the marginal tax rate. On the other hand, the impact of bankruptcy costs is relevant, as we find that leverage decreases with risk and increases with collateral. Because growth opportunities also induce bankruptcy costs, this determinant is part of the trade-off model. Agency problems are only insignificantly related to leverage. This does not imply that agency problems are absent in the Netherlands, because other factors may be involved. This particularly holds for the overinvestment problem, which is caused by free cash flow and the absence of the market for corporate control. The latter determinant is related to the Dutch institutional setting in which firms are allowed to have multiple technical anti-takeover barriers. The disciplining role of debt is not found in the data. Managerial shareholdings are found to mitigate overinvestment. The presence of large shareholders induces overinvestment, but the precise role of these blockholders remains unclear. We find no results that show the relevance of agency problems between shareholders and bondholders, and we conjecture that the entrenchment of the managers drives this finding. The agency problems from relationships with outside stakeholders are not confirmed, because we find no relations between leverage and product uniqueness or the importance of quality.

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Table I: Theoretical relations

(1) Theories and determinants	*Expected relationships*	
	(2) Determinants of leverage	*(3) Determinants of agency problems*
Tax effects		
■ marginal tax rate	positive	
■ non-debt tax shields	negative	
Bankruptcy costs		
■ collateral value of assets	positive	
■ business risk	negative	
Shareholder vs bondholder conflicts		
■ direct wealth transfer problem		
• leverage		positive
• covenants		negative
• secured debt		negative
• convertible debt		negative
• short-term debt		negative
■ asset substitution problem		
• leverage		positive
• covenants		negative
• secured debt		negative
• convertible debt		negative
• short-term debt		negative
■ underinvestment problem		
• leverage		positive
• growth opportunities		positive
• covenants		negative
• secured debt		negative
• convertible debt		negative
• short-term debt		negative
Shareholder vs manager conflicts		
■ overinvestment problem	positive	
• free cash flow		positive
• growth opportunities		negative
• managerial incentive structure		negative
• control structure		negative
Managers and claimants vs other stakeholders		
■ uniqueness	negative	
■ importance of quality	negative	

Table I: Theoretical relations (continued)

Note: Table I shows a summary of the empirical prediction of capital structure theories. The column denoted by the symbol *(1)* gives the five main groups of theories. Each group is divided into main components of the model, which can be either determinants of leverage or determinants of agency problems. The column indicated by *(2)* describes the hypotheses about the relationships between leverage and determinants of leverage. The column denoted by *(3)* gives the hypotheses about the relationships between the agency problems and the determinants of these problems.

Table II: Structural model

Explained variable	←	**Explanatory variables**
Leverage	←	marginal tax rate, non-debt tax shields, collateral value of assets, business risk, *overinvestment*, uniqueness, and importance of quality
Wealth transfer	←	*leverage*, covenants, secured debt, convertible debt, and short-term debt
Asset substitution	←	*leverage*, covenants, secured debt, convertible debt, and short-term debt
Underinvestment	←	*leverage*, growth opportunities, covenants, secured debt, convertible debt, and short-term debt
Overinvestment	←	free cash flow, growth opportunities, managerial shareholdings (managerial incentive structure), performance-based income (managerial incentive structure), managerial option plans (managerial incentive structure), market for corporate control (control structure), bank monitoring (control structure), asymmetric information (control structure), and block holdings (control structure)

Note: This table provides a summary of the relations in the structural equations model. It shows the variables to be explained and explanatory variables. Endogenous variables are in italics and exogenous variables are in regular font style. The variables are similar or derived from the determinants mentioned in Table I. In parentheses we give descriptions of determinants from which those variables have been derived.

Table III: Public data for Dutch listed firms

Variable	Average	Standard deviation
Capital structure		
long-term debt / total assets	0.128	(0.110)
long-term debt / firm value	0.095	(0.095)
short-term debt / total debt	0.776	(0.179)
convertible debt (% of firms)	7.0%	
Balance sheet and stock market data		
sales	NLG 4381 m	(14573)
total assets	NLG 3533 m	(13281)
firm value	NLG 5903 m	(22422)
taxes / earnings before taxes	0.219	(0.390)
non-debt tax shields / total assets	0.050	(0.066)
depreciation / total assets	0.054	(0.030)
Tobin's Q	1.644	(0.945)
market-to-book ratio	1.711	(0.956)
three-year growth in sales	0.106	(0.124)
tangible assets / total assets	0.343	(0.188)
operating income / total assets	0.097	(0.069)
Ownership structure (% of shares)		
largest blockholdings	27.3%	(21.7)
two largest blockholdings	36.7%	(26.2)
three largest blockholdings	41.1%	(26.9)
all blockholdings	48.4%	(28.7)
managerial blockholdings	6.13%	(16.5)
institutional blockholdings	10.9%	(12.1)
Bank relationships (% of firms)		
bankers on the board	24.0%	
bankers on the board with blockholdings	11.6%	
Takeover defenses (% of firms)		
priority shares	37.9%	
preferred shares	60.4%	
depository receipts	37.2%	
limited voting power	7.0%	

Table III: Public data for Dutch listed firms (continued)

Note: Annual report data are from an electronic data set of the Dutch Central Bureau of Statistics (see also Central Bureau of Statistics (1997)). Total assets is the book value of total assets. Firm value is the book value of total assets minus the book value of common equity plus the market value of common equity. Non-debt tax shields are defined as in Titman and Wessels (1988, p.4). Tobin's Q is simulated in accordance with the second technique in Perfect and Wiles (1994, p.329). We use an annual overview of blockholdings per April 30th, 1996, from *Het Financieele Dagblad,* the Dutch financial daily. Blockholdings are cashflow rights, with a minimum of 5%. Managerial shareholdings include shares possessed by the board of directors and the supervisory board. From *Jaarboek Nederlandse Ondernemingen 1995/1996* we obtained the names of board members of the firms and Dutch bank as of July 1996. The variable for bankers on the board represents the percentage of firms with at least one board member who is also a board member of a bank. The *Gids bij de Prijscourant van de Amsterdamse Effectenbeurs 1996* provides data on priority shares, preferred shares (less than 25% of the nominal value placed), depository receipts, and limited voting power rules. The number of observations is 129. On december 31st 1996 NLG 1 equals about USD 0.575.

Table IV: Results of confirmatory factor analysis

(1) Model	(2) Latent variable		(3) Indicator	(4) Average score (st.dev.)	(5) λ (*t*-value)	(6) δ (*t*-value)	(7) R^2
(A)	(1)	leverage	leverage (long term debt over total assets)	3.66 (2.64)	-	-	-
	(17)	convertible debt	convertible debt (and warrant bond loans)	0.16 (0.37)	-	-	-
	(18)	short-term debt	short-term debt (short term debt over total debt)	10.38 (5.61)	-	-	-
(B)	(7)	marginal tax rate	marginal tax rate	4.01 (1.85)	-	-	-
	(8)	non-debt tax shields	non-debt tax shields from carry forwards	3.28 (1.97)	0.38 (2.75)	0.86 (6.06)	0.14
			non-debt tax shields from depreciation	4.58 (1.43)	0.61 (3.35)	0.63 (2.95)	0.37
(C)	(9)	firm-specific risk	volatility profits	3.45 (1.52)	0.83 (5.86)	0.32 (1.63)	0.68
			volatility sales	3.26 (1.15)	0.69 (5.32)	0.52 (3.43)	0.69
	(10)	industry-specific risk	industry risk	4.28 (1.69)	-	-	-
	(12)	uniqueness (customers)	uniqueness towards customers	3.97 (1.79)	-	-	-
	(13)	uniqueness (employees)	uniqueness towards employees	3.38 (1.43)	-	-	-
	(14)	importance of quality	importance of quality	3.92 (1.55)	-	-	-
(D)	(19)	growth opportunities	growth opportunities from R&D	4.19 (1.79)	0.33 (2.27)	0.89 (6.10)	0.11
			growth opportunities from marketing	4.71 (1.40)	0.54 (2.67)	0.71 (3.26)	0.29
	(11)	collateral value	collateral value	5.04 (1.62)	-	-	-
(E)	(20)	free cash flow	free cash flow (projects)	5.56 (1.28)	0.49 (4.22)	0.76 (6.08)	0.24
			free cash flow (liquid assets)	3.15 (1.85)	0.78 (5.75)	0.39 (2.18)	0.61
			free cash flow (internal funds)	4.21 (1.70)	0.64 (5.11)	0.59 (4.23)	0.41
(F)	(21)	managerial shareholdings	managerial shareholdings	2.51 (1.81)	-	-	-
	(22)	performance-based income	impact of performance on managerial income	2.99 (1.69)	-	-	-
	(23)	managerial option plans	managerial option plans	2.80 (1.82)	-	-	-
	(24)	asymmetric information	asymmetric information	5.04 (1.24)	-	-	-
	(25)	block holdings	block holdings	4.55 (1.98)	-	-	-
	(26)	bank monitoring	relationships with house banks	5.94 (1.26)	-	-	-
	(27)	market corporate control (threat)	market corporate control (threat)	3.26 (1.66)	-	-	-
	(28)	market corporate control (barriers)	market corporate control (barriers)	3.26 (2.03)	-	-	-
(G)	(15)	covenants	covenants on dividends	2.20 (1.49)	0.73 (7.35)	0.47 (4.83)	0.53
			covenants on contracts	3.43 (1.92)	0.76 (7.68)	0.43 (4.38)	0.57
			covenants on investments	2.61 (1.56)	0.71 (7.20)	0.49 (5.00)	0.51
	(16)	secured debt	secured debt	3.20 (1.92)	-	-	-
(H)	(2)	wealth transfers (dividends)	direct wealth transfer with dividends	2.35 (1.56)	-	-	-
	(3)	wealth transfers (seniority)	direct wealth transfer with seniority	3.68 (1.48)	-	-	-
	(4)	asset substitution	asset substitution (problem)	3.19 (1.39)	0.71 (2.81)	0.49 (1.43)	0.51
			asset substitution (distress)	2.20 (1.37)	0.25 (1.96)	0.94 (6.76)	0.06
	(5)	underinvestment	underinvestment (problem)	2.67 (1.64)	0.45 (3.55)	0.80 (5.85)	0.20
			underinvestment (distress)	3.94 (1.62)	0.73 (4.50)	0.47 (2.19)	0.53
	(6)	overinvestment	overinvestment	4.19 (1.52)	-	-	-

Table IV: Results of confirmatory factor analysis (continued)

Note: In column *1* the eight confirmatory factor analysis models are mentioned, which are denoted by *A* through *H*. In column *2* the numbers and the descriptions of the latent variables are given. In column *3* the questions in the questionnaire, which are used as indicators, are summarized. In column *4* averages and standard deviations of the raw scores are provided. Note that indicators are measure on a 1-7 scale, exceptions are leverage (1-20), short-term debt (1-20), and convertible debt (0-1). In column *5* the estimates for λ and their *t*-values are given. The λ's represent the relationship between the indicator and the latent variables. Column *6* provides the error terms δ (and their *t*-values) of the relationships between the indicators and the latent variables. In column *7* the R^2's are given, which represent the parts of the variances in the indicators that are explained by the latent variables.

Table V: Statistics of confirmatory factor analysis

(1) Model	(2) Latent variable	(3) AGFI	(4) RMSR	(5) Validity	(6) Reliability
(B)	non-debt tax shields	-	-	0.26	0.40
(C)	firm-specific risk	0.77	0.045	0.58	0.73
(D)	growth opportunities	-	-	0.20	0.32
(E)	free cash flow	-	-	0.42	0.68
(G)	covenants	0.89	0.12	0.54	0.78
(H)	asset substitution	0.90	0.049	0.28	0.39
(H)	underinvestment	0.90	0.049	0.37	0.52

Note: In column *1* the confirmatory factor analysis model of which the latent variables are part, are mentioned. In column *2* the names of the latent variables are given. The names of the latent variables correspond to those in Table IV. In column *3* the adjusted goodness-of-fit indices (AGFI) are provided. In column *4* the root mean squared residuals (RMSR) are given. Columns *5* and *6* provide the validity and the reliability, respectively, as discussed in Section II.B. The symbol '-' indicates that no degrees of freedom are left to calculate AGFI and RMSR.

Table VI: Correlations between latent variables

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		leverage	wealth div	wealth sen	asset	under	over	marg tax	ndts	risk firm	risk indus	collateral	uniquecust	uniqueemp	quality
(1)	leverage	1.00													
(2)	wealth div	-0.06	1.00												
(3)	wealth sen	-0.06	-0.12	1.00											
(4)	asset	-0.05	0.70	-0.22	1.00										
(5)	under	0.08	0.46	-0.11	0.50	1.00									
(6)	over	0.05	-0.02	-0.12	-0.01	-0.40	1.00								
(7)	marg tax	0.50	-0.03	-0.01	-0.03	0.16	-0.05	1.00							
(8)	ndts	0.39	0.05	-0.06	-0.04	0.12	-0.01	0.78	1.00						
(9)	risk firm	0.01	0.15	0.10	0.01	0.28	-0.16	0.09	0.22	1.00					
(10)	risk indus	-0.27	0.00	0.01	0.09	0.19	0.04	-0.17	-0.05	0.08	1.00				
(11)	collateral	0.37	-0.02	0.01	0.02	0.05	0.02	0.31	0.31	-0.03	-0.24	1.00			
(12)	uniquecust	-0.05	-0.23	0.07	-0.25	-0.22	0.12	-0.09	0.00	-0.23	-0.02	0.06	1.00		
(13)	uniqueemp	0.15	0.09	-0.08	0.04	0.15	0.18	0.06	0.16	0.12	-0.04	0.22	0.26	1.00	
(14)	quality	0.02	-0.24	-0.24	-0.08	-0.16	0.23	0.01	-0.10	-0.35	0.21	0.04	0.23	0.04	1.00
(15)	covenants	-0.10	0.22	0.09	0.18	0.18	0.06	-0.09	-0.07	0.05	0.10	0.00	-0.03	0.19	-0.15
(16)	secured	-0.13	0.19	0.15	0.14	0.09	0.04	-0.13	-0.07	0.05	0.04	0.07	0.01	0.12	-0.02
(17)	convertible	0.14	-0.13	0.09	-0.09	-0.02	0.00	0.22	0.20	0.14	-0.13	0.08	-0.01	0.12	-0.15
(18)	short debt	-0.34	0.12	0.04	0.06	-0.20	-0.07	-0.28	-0.19	-0.01	-0.09	-0.10	0.04	-0.24	-0.15
(19)	gr_options	-0.36	0.00	-0.04	-0.05	-0.09	0.03	-0.36	-0.29	0.05	0.47	-0.75	0.00	-0.05	0.11
(20)	free cf	-0.15	-0.02	-0.15	-0.04	-0.28	0.21	-0.31	-0.28	-0.30	-0.18	-0.18	0.08	-0.08	0.08
(21)	mgt_share	-0.04	0.34	0.04	0.30	0.21	-0.16	-0.06	-0.04	-0.11	0.00	-0.10	-0.04	0.13	0.01
(22)	mgt_option	0.04	0.09	0.04	0.05	0.15	-0.05	0.03	0.00	0.09	-0.05	-0.12	-0.02	0.01	0.02
(23)	mgt_perf	-0.05	0.08	0.02	0.04	0.18	-0.10	0.00	-0.02	0.14	-0.04	-0.10	0.02	0.09	-0.14
(24)	as info	0.07	0.02	0.01	0.05	0.07	0.04	0.15	0.08	-0.08	0.04	0.08	0.24	0.03	0.05
(25)	blockh	-0.02	0.14	0.27	0.17	0.01	0.20	-0.04	-0.01	0.08	0.09	0.07	0.13	0.13	-0.03
(26)	bank	-0.05	0.06	-0.03	0.17	-0.01	-0.08	-0.03	-0.10	0.02	-0.06	0.02	-0.08	0.03	0.00
(27)	mcc threat	-0.08	0.04	-0.09	0.13	0.33	-0.22	-0.05	-0.06	0.07	0.30	-0.05	-0.01	0.01	-0.07
(28)	mcc barr's	-0.06	-0.20	0.02	-0.14	-0.10	-0.19	-0.10	-0.07	0.04	-0.04	-0.03	-0.04	-0.03	-0.04

Table VI: Correlations between latent variables (continued)

		(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
		covenants	secured	convertible	short debt	gr_options	free cf	mgt_share	mgt_option	mgt_perf	as info	blockh	bank	mcc threat	mcc barr's
(15)	covenants	1.00													
(16)	secured	0.52	1.00												
(17)	convertible	-0.15	-0.09	1.00											
(18)	short debt	-0.08	-0.03	-0.01	1.00										
(19)	gr_options	0.04	0.03	-0.01	0.10	1.00									
(20)	free cf	-0.05	-0.04	-0.14	-0.07	0.07	1.00								
(21)	mgt_share	0.01	-0.05	-0.02	0.01	0.08	0.11	1.00							
(22)	mgt_option	-0.12	-0.24	0.10	-0.03	0.05	0.05	0.35	1.00						
(23)	mgt_perf	-0.04	-0.10	0.07	-0.03	0.03	-0.02	0.11	0.67	1.00					
(24)	as info	-0.16	-0.01	0.23	-0.16	0.06	0.01	0.20	0.02	0.09	1.00				
(25)	blockh	0.12	0.15	-0.19	0.03	-0.09	-0.05	0.10	-0.04	0.07	0.27	1.00			
(26)	bank	0.15	0.09	0.06	-0.01	-0.03	-0.03	0.12	-0.06	0.06	0.11	-0.03	1.00		
(27)	mcc threat	0.04	-0.06	0.10	-0.02	0.15	-0.17	-0.01	0.02	-0.05	0.01	-0.08	0.03	1.00	
(28)	mcc barr's	-0.03	0.18	0.00	0.01	-0.01	0.01	0.02	-0.01	0.03	0.01	-0.03	-0.06	0.02	1.00

Note: The numbers in parentheses followed by the abbreviations of the latent variables (in the upper row and the left column) correspond with the numbers in Table IV. The number of observations is 102.

Table VII: Regression results

Panel A: determinants of leverage

Leverage	(1)	(2)	(3)
intercept	0.192 (0.34)	0.226 (0.54)	-0.293 (-0.98)
marginal tax rate	0.392 (2.67)***	0.408 (4.65)***	0.423 (4.79)***
non-debt tax shields	0.013 (0.09)		
collateral value	0.188 (1.99)**	0.211 (2.36)**	0.243 (2.75)***
firm-specific risk	-0.025 (-0.26)		
industry-specific risk	-0.163 (-1.74)*	-0.150 (-1.74)*	
uniqueness (customers)	-0.074 (-0.79)		
uniqueness (employees)	0.099 (1.07)		
importance of quality	0.048 (0.49)		
R^2	*0.28*	*0.30*	*0.29*

Panel B: determinants of the agency problems

Wealth transfer (dividends)	(1)	(2)	(3)
intercept	0.763 (2.36)**	1.004 (4.23)***	1.004 (4.23)***
covenants	0.173 (1.51)	0.225 (2.31)**	0.225 (2.31)**
secured debt	0.093 (0.82)		
convertible debt	-0.098 (-1.00)		
short-term debt	0.131 (1.35)		
R^2	*0.05*	*0.04*	*0.04*

Wealth transfer (seniority)	(1)	(2)	(3)
intercept	2.063 (6.22)***		
covenants	0.043 (0.37)		
secured debt	0.138 (1.18)		
convertible debt	0.107 (1.06)		
short-term debt	0.053 (0.53)		
R^2	*0.00*		

Asset substitution	(1)	(2)	(3)
intercept	0.763 (2.36)**	2.110 (8.82)***	
covenants	0.149 (1.28)	0.185 (1.88)*	
secured debt	0.062 (0.53)		
convertible debt	-0.063 (-0.63)		
short-term debt	0.074 (0.75)		
R^2	*0.01*	*0.02*	

Table VII: Regression results (continued)

Underinvestment	**(1)**	**(2)**	**(3)**
intercept	2.015 (6.13)***	1.985 (6.45)***	2.377 (11.52)***
growth opportunities	-0.077 (-0.78)		
covenants	0.171 (1.48)	0.166 (1.71)*	
secured debt	-0.003 (-0.03)		
convertible debt	-0.001 (-0.01)		
short-term debt	-0.183 (-1.85)*	-0.191 (-1.96)*	-0.203 (-2.08)**
R^2	*0.03*	*0.05*	*0.03*
Overinvestment	**(1)**	**(2)**	**(3)**
intercept	2.731 (3.78)***	2.599 (5.64)***	2.174 (5.51)***
free cash flow	0.199 (2.08)**	0.217 (2.31)**	0.246 (2.62)***
growth opportunities	0.080 (0.84)		
managerial shareholdings	-0.246 (-2.31)**	-0.201 (-2.15)**	-0.203 (-2.16)**
performance-based income	-0.202 (-1.52)		
managerial option plans	0.161 (1.14)		
market c. control threat	-0.190 (-1.97)**	-0.163 (-1.74)*	
market c. control barriers	-0.170 (-1.82)*	-0.179 (-1.94)*	-0.182 (-1.96)**
bank monitoring	-0.021 (-0.22)		
asymmetric information	0.032 (0.32)		
block holdings	0.232 (2.33)**	0.211 (2.27)**	0.225 (2.40)**
R^2	*0.22*	*0.19*	*0.16*

Note: The regressions in column *1* include all explained variables (underlined) and explanatory variables. The endogenous variables are in italics and the exogenous variables are in normal characters. The coefficients and the *t*-values (in parentheses) are reported. Stepwise deletion of the variables with the lowest absolute t-value was used. As a result, the regressions in column *2* and *3* only include exogenous variables the are significantly related at 10% and 5% level respectively. The symbol '***' denotes that the estimate is significant at the 1% level (t>2.57). The symbol '**' denotes 5% significance level (t>1.96) and '*' denotes 10% significance level (t>1.65). The number of observations is 102.

Table VIII: Results of the structural equations model

Leverage		
intercept	0.05	(0.10)
marginal tax rate	0.41	(4.41)***
collateral value	0.21	(2.19)**
industry-specific risk	-0.15	(-1.68)*
overinvestment	0.71	(0.81)
R^2		*0.32*
Underinvestment		
intercept	2.05	(5.21)***
leverage	0.01	(0.10)
growth opportunities	-0.08	(-0.69)
covenants	0.15	(1.48)
short-term debt	-0.20	(-1.88)*
R^2		*0.08*
Overinvestment		
intercept	2.72	(5.44)***
growth opportunities	0.08	(0.87)
free cash flow	0.20	(2.05)**
managerial shareholdings	-0.24	(-2.31)**
market c. control threat	-0.19	(-1.93)*
market c. control barriers	-0.17	(-1.77)*
block holdings	0.24	(2.44)**
R^2		*0.19*

Note: In the structural equations model explained variables are underlined and the explanatory variables are not. The endogenous variables are in italics and the exogenous variables are in regular font style. The coefficients and the *t*-values (in parentheses) are reported. The symbol '***' denotes that the estimate is significant at the 1% level (t>2.57). The symbol '**' denotes 5% significance level (t>1.96) and '*' denotes 10% significance level (t>1.65). The number of observations is 102.

Appendix: The questionnaire

Note: The sequence of the questions is adapted to the sequence of the indicators in column (3) of Table IV. The questions are translated from Dutch.

(A)
Leverage: "The *debt ratio* is debt with a time to maturity of more than one year divided by total assets. What is in your firm the debt ratio (measured in book values)?" (20 intervals, from 0-4 till 95-100)
Convertible debt: "Are convertible bonds or bonds with warrants part of your financial structure (exclude arrangements for employees)?" (2 options, yes/no)
Short-term debt: "The *short-term debt ratio* is debt with a time to maturity of less than one year divided by total debt. What is in your firm the short-term debt ratio (measured in book values)?" (20 intervals, from 0-4 till 95-100)

(B)
Marginal tax rate: "Assume that the deductibility of interest payments is abolished. To what extent will the amount of taxes that have to be paid increase?" (7 points scale, very little/very much)
Non-debt tax shield from carry forwards: "Carry forwards reduce future tax payments. What is the size of this effect of *carry forwards* for your firm?" (7 points scale, very small/very large)
Non-debt tax shield from depreciation: "Depreciation reduces future tax payments. What is the size of this effect of *depreciation* on tax payments for your firm?" (7 points scale, very small/very large)

(C)
Volatility profits: "Are the profits of your firm stable over time?" (7 points scale, very unstable/very stable, inverted)
Volatility sales: "What is the degree of predictability of the sales of your firm for the next three years?" (7 points scale, very good/very bad, inverted)
Industry risk: "My firm operates in markets where, because of innovations, products and services, age continuously, and succeed each other rapidly" (7 points scale, fully disagree/fully agree)
Uniqueness towards customers: "The products and services of my firm are easily replaceable by customers for products and services of another firm." (7 points scale, fully agree/fully disagree, inverted)
Uniqueness towards employees: "My employees depend upon the continuity of my firm, because it is difficult for them to find a suitable position in another firm." (7 points scale, fully agree/fully disagree, inverted)
Importance of quality: "For the products and services of my firm it holds that competition is primarily based on quality and not on price." (7 points scale, fully disagree/fully agree)

(D)
Growth opportunities from R&D: "My firm invests much in R&D." (7 points scale, fully disagree/fully agree)
Growth opportunities from marketing: "My firm invests much in marketing." (7 points scale, fully disagree/fully agree)
Collateral value: "Assume that your firm has not secured any of its assets yet. Which part of your assets is suitable for securitization?" (7 points scale, very small/very large)

(E)
Free cash flow (projects): "My firm has ample opportunity to carry out new, profitable projects." (7 points scale, fully disagree/fully agree)
Free cash flow (liquid assets): "My firm has disposal over much liquidity for which there is no clear destination yet." (7 points scale, fully disagree/fully agree)
Free cash flow (internal funds): "The current and future internal funds are more than sufficient to finance all future profitable projects." (7 points scale, fully disagree/fully agree)

(F)
Managerial shareholdings: "Does the management of your firm own shares of the firm?" (7 points scale, very

little/very much)
Performance-based income: “The part of total income of the management (of which you are a member) that is determined by the stock price of the firm, is large. (Take e.g. bonuses, shares, and options into consideration.)” (7 points scale, fully disagree/fully agree)
Managerial option plans: “Does the management of your firm own options or warrants of the firm?” (7 points scale, very little/very much)
Asymmetric information: “The shareholders of my firm are fully informed about the course of events within the firm.” (7 points scale, fully disagree/fully agree)
Block holdings: “Shares of my firm are to a large extent owned by large shareholders.” (7 points scale, fully disagree/fully agree)
Bank relationship: “My firm has close and lasting relationships with house bankers.” (7 points scale, fully disagree/fully agree)
Market for corporate control (threat): “If the management of my firm would function insufficiently, the firm would be taken over by another firm.” (7 points scale, fully disagree/fully agree)
Market for corporate control (barriers): “The current takeover barriers of my firm make a hostile takeover impossible.” (7 points scale, fully agree/fully disagree, inverted)

(G)
Covenants on dividends: “Are restrictions with respect to dividend payments included in long-term debt contracts?” (7 points scale, never/always)
Covenants on other contracts: “Are restrictions with respect to concluding other contracts included in long-term debt contracts?” (7 points scale, never/always)
Covenants on investment decisions: “Are restrictions with respect to investment decisions included in long-term debt contracts?” (7 points scale, never/always)
Secured debt: “Is security used in long term debt contracts?” (7 points scale, never/always)

(H)
Direct wealth transfer with dividends: “The management of my firm can be successfully approached by the shareholders to pay out *extraordinary* cash dividends.” (7 points scale, fully disagree/fully agree)
Direct wealth transfer with debt seniority: “My firm will only conclude long-term loans with lower or equal seniority as the current loans.” (7 points scale, fully agree/fully disagree, inverted)
Asset substitution (problem): “I expect that our shareholders will insist on a more aggressive investment policy, in case of structural low profits, in the hope of higher profits.” (7 points scale, fully disagree/fully agree)
Asset substitution (distress): “Projects of which the uncertainty is unacceptable under normal circumstances, will be undertaken in case of a threat of bankruptcy.” (7 points scale, fully disagree/fully agree)
Underinvestment (problem): “In my firm it might occur that a potentially successful project is not started, because new shares have to be issued to finance the project.” (7 points scale, fully disagree/fully agree)
Underinvestment (distress): “In worse days for the firm our shareholders will be extra reserved with respect to financing new promising projects.” (7 points scale, fully disagree/fully agree)
Overinvestment: “In my firm a project is accepted if it is useful to the management’s opinion, even it is expected that this causes a reduction in the stock price.” (7 points scale, fully disagree/fully agree)

Footnotes

1. The Amsterdam Stock Exchange makes the Netherlands the country with the eighth largest stock market capitalization in the world (as of March 31st 1997, The Economist, April 26th 1997).

2. According to a report by Coopers & Lybrand (1990) technical takeover defenses in the European Community are most severe in the Netherlands. An overview of Dutch takeover defenses is provided by Kabir, Cantrijn, and Jeunink (1997). Since 1960 only one hostile takeover took place, i.e. in 1979 Lantana Beheer took over Tilburgse Waterleidingmaatschappij.

3. All listed firms have a two-tier board system, i.e. a supervisory board is installed to control the executive board. Kabir, Cantrijn, and Jeunink (1997) find that in the Netherlands, on average the five largest shareholders own 49% of the shares. For example, Prowse (1992) finds that the five largest shareholders have in the US on average 25% of the shares.

4. Titman and Wessels (1988) conclude their paper with this problem, stating that "*If stronger linkages between observable indicator variables and the relevant attributes can be developed, then the methods suggested in this paper can be used to test more precisely the extant theories of optimal capital structure*." (see p.17). Also Rajan and Zingales (1995) mention this problem as they conclude "*..it is necessary to strengthen the relationships between theoretical models and empirical specifications of these models. This, we believe, will be possible only with more detailed data which will enable us to identify more accurate proxies.*" (see p.1458).

5. Examples of studies based on questionnaires are Scott and Johnson (1982) and Pinegar and Wilbricht (1989). For example, Pinegar and Wilbricht ask respondents to give the perceived importance of several capital structure inputs (such as 'voting control' and 'bankruptcy costs').

6. Jensen and Meckling (1976) argue that in case managers are not or only partial owners of the firm, the costs of the consumption of perquisites are not or partially born by the managers. Managers can reduce effort or use company funds to their own benefits. Perquisite consumption is defined as *'..utility generated by non-pecuniary aspects of his entrepreneurial activities..'* (p.312). Overinvestment is a special case of this problem.

7. It is important to describe the proxies in Titman and Wessels (1988). The first proxy for uniqueness is a combination of R&D and selling expenses, both over sales, and the industry

quit rate of employees. The first and second variable in this proxy show close resemblance with the proxy for growth opportunities. The latter variable is inversely related to uniqueness and defined as the percentage of workforce that voluntarily left their jobs in the industry in which the firm operates. The second proxy is a dummy for industries with SIC codes between 3400 and 4000, which are the firms producing machines and other equipment.

8. This approach is often referred to as LISREL, a software package including confirmatory factor analysis and structural equations modeling. However, LISREL can be applied for both the one-step and the two-step approach. See Jöreskog and Sörbom (1989, 1993).

9. Homogeneous questions ask the respondent about a single characteristic. Heterogeneous questions incorporate multiple characteristics and therefore scores cannot be attributed to single characteristics. Within a measurement model single characteristics are the indicators for a latent variable that can be heterogeneous or homogeneous.

10. In this paper we use an estimate of the correlation matrix for *S* as suggested by Jöreskog and Sörbom (1993, p.7). Consequently, the correlations are polychoric (two ordinal variables), polyserial (one ordinal and one continuous variable), or Pearson product moment correlations (two continuous variables).

11. Following Jöreskog and Sörbom (1989, p.131) we calculate the matrix *A* that contains the factor scores as $A=\Phi\Lambda'\Sigma^{-1}$.

12. This method is referred to as mean imputation, see Little and Rubin (1987).

13. As the debt ratio in the questionnaire is measured in 20 intervals, the debt ratios are not fully comparable. However, using the median of the interval, the average debt ratio is 15.3%.

14. The positions mentioned on these forms generally indicate that the respondent is the person who is responsible for the firm's financial management. The positions most frequently mentioned are CFO (in Dutch: 'financieel directeur', 43% of the positions mentioned), CEO (in Dutch: 'algemeen directeur', 20%), and controller (17%).

15. The original questionnaire (in Dutch) is available upon request from the authors. In the appendix a translation is included.

16. In the first round 81 questionnaires were returned and in the follow-up 21 questionnaires were returned.

17. The questionnaire includes 43 questions. One question is excluded because the variance is zero. Five other questions are excluded, because the questions are redundant or because, based upon examination of the results, we suspect these questions to be incorrect.

18. The results in Table IV concern the final model. In a previous model it was found that the latent variables risk, uniqueness, market for corporate control, and wealth transfer each had to be separated into two latent variables, because the hypothesis that the indicators of these latent variables measure a single construct was rejected. As shown in Table IV, this results in four pairs of new variables, i.e. firm-specific and industry-specific risk, uniqueness to customers and uniqueness to employees, corporate control threat and corporate control barriers, and wealth transfer with dividends and wealth transfer with debt seniority.

19. For this and further conclusions about the significance of coefficients we ignore the generated variables problem.

20. In Titman and Wessels (1988) uniqueness is measured as a weighted average of relative R&D expenditures, relative selling expenses, and the voluntary workers' quit rate in the firm's industry. Their factor analysis shows that the latter indicator receives the lowest weight. Hence, the construct of uniqueness shows a large resemblance with growth opportunities or intangible assets, and can therefore also be considered as bankruptcy costs.

21. Wealth transfer with dividends or seniority and asset substitution are excluded from the structural equations model. The correlations of these latent variables with leverage are very low (see Table VI). Hence, it is unlikely that excluding these variables induces erroneous interpretations.