Managerial Risk Preferences, Human Capital and the Maturity Structure of Corporate Debt

Balbinder Singh Gill[1][2]

Abstract

This article analyzes whether managers are able to increase their risk appetite by sustaining or by even increasing the quality of the firm's human capital. Corporate management and highly educated employees become natural allies when they share the same goal: i.e. conducting risky investments. Previous research suggests that shortening the corporate debt maturity can strongly alter managerial incentives to increase risk and may solve the potential misalignment of interests between shareholders and managers. Short-term debt maturities have very little impact on CEOs' willingness to accept risky projects, except when managers possess valuable information about future investment opportunities.

JEL classification: G32, G34 and G35
Key words: debt maturity, agency, human capital

First Draft: October 2011
This Draft: December 2012

[1] Department of General Economics - Faculty of Economics and Business Administration, Tweekerkenstraat 2, Ghent University, B-9000 Gent, Belgium. Tel.: +329 264 34 80; fax: +329 264 35 99. E-mail address: balbinder.gill@ugent.be (B.S. Gill)

[2] The author gratefully acknowledges financial support from the Special Research Fund of the University of Ghent. This paper was previously circulating under the names "Debt Maturity, Cash Holdings, Dividend Policy, and Employee Characteristics" and "Agency Conflicts, Human Capital, Payout Policy and the Maturity Structure of Corporate Debt". I am also especially grateful for helpful comments of David Yermack, Koen Schoors and participants of the 9th Workshop on Corporate Governance of the European Institute for Advanced Studies in Management (Brussels).

Two fundamental questions in financial economics are: how do CEOs take more risk and how do firms deal with their executive's appetite for risk? Since the seminal work of Barnea, Haugen, and Senbet (1980), many attempts to answer both of these questions have generated a great deal of discussion in the finance literature. A large stream of the literature argues that executive equity-based compensation influences managerial risk preferences for listed firms[3]. Another body of the literature claims that overconfident executives may take more risk when they assess and overstate their own personal characteristics such as judgment, ability or optimism about future successful life outcomes to the average CEO (Hirshleifer, Low, and Hong Teoh (2012) and Malmendier and Tate (2005)).

The goal of this paper is twofold. First, I do not question previous findings, but I complement existing insights of managerial risk-taking by providing novel means of how managers may also take risk by changing the quality of the firm's human capital. Finally, how the board of directors may need to employ disciplinary measures such as shortening the corporate debt maturity to mitigate the detrimental effects of managerial risk-taking behavior in unlisted firms.

In this paper, I argue and provide strong evidence that the quality of the firm's human capital encourage managers to take more risk. Shortening debt maturity is only an effective mean to reduce managerial incentives to increase risk in case managers possess valuable information about future investment opportunities.

The importance of examining new means of managerial risk taking is illustrated by the following quote of Malmendier and Tate (2005), page 2664: "A manager whose incentives are perfectly aligned and who does not face any informational asymmetries may still invest suboptimal if he is overconfident. He believes that he is acting in the best interest of shareholders." The executive may not only invest suboptimal in case he is overconfident, but

[3] See Brockman, Martin and Unlu (2010); Coles, Daniel, and Naveen (2006); Michell, Rajgopal and Shevlin (2004); and Knopf, Nam, and Thornton (2002); Lambert, Larcker, and Verrachia (1991)).

may also induce a suboptimal investment strategy in case the CEO uses the firm's employment policy to serve their own interests (i.e., empire building, higher perks, risky investments, etc.). Moreover, corporate management and workers become natural allies in case they share the same goals (e.g. conducting risky investments) and this can be realized in two ways. First, by transforming the firm's workforce into a high quality workforce through the recruitment of highly educated workers or by keeping more highly educated workers in the firm. The higher the qualification of workers, the stronger will be the manager's appetite for risk. The more highly educated workers are been kept at the firm, the more the manager will seek risky investments. Finally, executives can also increase and sustain the quality of the firm's human capital by hiring and keeping more employees with a long-term labor contract. Large number of workers with a permanent employment contract may encourage more managerial risk-taking. The concept where workers and managers become natural allies in case they share the same interests does exist. For example Pagana and Volpin (2005, 2001) and Hellwig (2000) show that labor-management alliance can also occur in case of a takeover threat.

Risky investments may take a long time to generate the expected positive return. Manager's overconfidence tends to be more severe in settings where firm's human capital largely consists of highly educated workers or employees on a long-term work contract. Moreover, board of directors may become aware that the executive may not fully act in the interests of the shareholders in this setting. As a result, this potential misalignment of the interests between shareholders and managers can be effectively solved by means of shortening the debt maturity. This argument enjoys wide support among financial economists[4]. I therefore expect that when executives tend to hire or keep proportionally more

[4] See Meyer (1977); Stulz (1990); Easterwood and Kadapakkam (1994); Agrawal and Knoeber (1996); Stochs and Mauer (1996); Barclay, Marx and Smith (2003); Johnson (2003); Aivazian, Ge and Qiu (2005); Grinstein (2006); Billet, King, and Mauer (2007); Gatchev, Spindth and Tarhan (2009); Shyu and Lee (2009); Brockman, Martin and Enre (2010), etc.

highly educated (permanent) workers than other workers, than the larger the proportion of shorter-term debt in the total debt of the firm.

This paper consists of two parts. In the first part, I examine the extent to which changes in the quality of the firm's human capital induces managers to pursue risky investments. In the final part of this study, the paper investigates whether shortening the debt maturity may mitigate the agency costs between shareholders, overconfident managers and creditors for a sample of unquoted Belgian firms. I compare two cases where firms may decide to shorten their debt maturity by either choosing debt that matures in one year or less or debt that matures in five years or less.

Data availability is often an obstacle to any study that includes worker's characteristics such as highest educational degree of a worker, work plans and employment contract of the worker at firm level[5]. For example, Compustat Database only provides insights on the total labor costs of workers. American listed firms are not generally obliged to disclose information about the total wage costs. More precisely larger firms, regulated firms, and firms with higher labor intensity are more likely to disclose labor costs (Ballester, Livnat and Sinha (2012)). With my detailed date set, I am able to explore the effects of managerial risk taking potentially caused by worker's characteristics such as highest educational degree, work status and employment contract on the corporate debt maturity structure for unlisted Belgian firms. Moreover, the dataset provides unique insights into how many workers are been hired by the firm and have left the firm irrespective whether I sort workers on their employment contract, highest educational degree, gender or work schemes. In this paper, two different standard normalized measures of changes in a firm's human capital are been used. Each determinant measures how much the change in the quality of the firm's human capital deviates from their sector mean.

[5] See Cronqvist, Heyman, Nilson, Svaleryd, and Vlachos (2009) and Hanka (1998).

In terms of investment policy, this paper provides very strong evidence that when managers hire proportionally more highly educated workers than other workers they implement riskier policy choices, including relatively more investments in high risk projects (research and development expenditures) and less investments in tangible assets such as property, plants and equipment.

Next, I study the empirical relation between changes in the firm's human capital and corporate debt maturity. The findings suggest that creditors differently value changes in the quality of the human capital caused by changes in the proportion of long-term employment contract workers or highly educated workers. On the one hand, CEOs are provided a potentially stronger motive for asset substitution in case they proportionally keep more workers on a long-term contract than other workers. Short-debt maturities are more likely to be chosen when the firm's investment policy is not directly aligned with the interests of the creditors. The results confirm Graham and Harvey (2001) survey result. The use of more short-term debt maturities has very little impact on CEOs' willingness to accept risky investments. For example, a firm in the wholesale sector with roughly 50 % of its total debt in short-term debt maturities, a one standard deviation change to the right of the mean departures of permanent workers of the wholesale sector would increase this short-term component from 50 % to 58.91 %. On the other hand, when managers hire less or keep more highly educated workers than other workers, then short-term debt maturities are more likely to be chosen when manager's incentive to substitute risky assets for safer assets is high.

This paper also investigates whether creditors differently value managers that take into account time consideration in determining their own risk behavior. More precisely, I use two different risk behavior models: the experience-based (backward) and the forward-looking investment behavior model (Chen (2008)). For example, the forward-looking investment behavior model implies that managers determine their own risk behavior based on a cognitive

image of the future investment opportunities of the firm. As a result, in case managers possess valuable information about future investment opportunities than they will be more encouraged to take more risk. The findings suggest that the quality of the available information (positive or negative information of future investment opportunities) possessed by CEOs within a decision model has an economically negligible influence on the empirical associations between debt maturity measures and changes in human capital. However, creditors are willing to grant more short-term debt in case CEOs are forward-looking. Moreover CEOs possess valuable information that they may have positive investment opportunities. They seek more risky investments in case they keep proportionally more highly educated workers than other workers. In this case, the use of short-term debt maturities can strongly alter managerial incentives to increase risk, and may solve the potential misalignment of the interest between shareholders and creditors.

I investigate whether the board of directors may indirectly choose a combination of the employment relationship variables by holding temporarily more short-term debt to implement the most convenient value-maximizing investment and financial policies. The findings confirms that lenders are willing to provide more short-term financing in case CEOs proportionally hire more workers on a long-term contract or more permanent workers leave the firm. However, the increase in short-term financing is not aimed to reduce manager's ability to seek risky investment, but to constrain the firm's cash flow that is probably be destined for either newly hired workers on a long-term employment contract (wages) or in case more permanent workers leave the firm (loss of human capital in case permanent employees quit their jobs or severance payments in case of forced redundancy).

My empirical results also provide insights of how managerial overconfidence affects firm investment decisions. Previous research has shown that CEO's overconfidence is largely caused by overestimating their personal traits to an average CEO (for example see Hirshleifer,

Low and Hong Teoh (2012)). I complement these findings by providing insights that managers may also become overconfident in case they are aware that they have the disposal of a highly qualified workforce to carry out their risky investments.

The remaining sections of the paper are organized as follows. Section I reviews the related research and develops my testable hypotheses. Section II describes the data selection, sample selection, variables selection and presents summary statistics. Section III presents the empirical results with a series of robustness test. Section IV concludes the paper.

I. Related research and Hypotheses

Previous empirical research has largely claimed that managerial risk can be mainly managed through executive compensation in listed firms[6]. Agency theory argues that the quality of the firm's human capital can also increase the manager's appetite for risk. Managers can create an entrenchment friendly workforce that supports the management in their strategic decision making. For example, labor-friendly management may extract excessive pay and perk compensation from the firm since workers may be less inclined to protest against excessive compensation when they are generous paid to ordinary employees (Faleye and Trahan (2011)).

Human capital can also increase managerial confidence and this may lead to distortion in corporate investment policies[7]. Moreover if executives become overconfident, have sufficient internal funds for investment and are not disciplined by internal corporate governance mechanisms than they tend to systematically overestimate the returns to their investment projects (Malmendier and Tate (2005)). Dolly King and Wen (2011) show that risky investments mainly result from weak overall corporate governance structure, whereas strong

[6] More precisely, higher compensation package sensitivity to stock prices lowers the manager's appetite for risk. A higher compensation package sensitivity to stock return volatility implements more riskier policy choices such as more investments in R&D, higher leverage and less investments in property, plant and equipment (Brockman, Martin and Unlu (2010) and Coles, Daniel, and Naveen (2006))

[7] In general, two stream of literature exists that try to explain why managerial overconfidence may lead to distortion in corporate investment policies. First, investment distortions are the result of misalignment of shareholders and managers interests (Jensen and Meckling (1976) and Jensen (1986)). Finally, Myers and Majluf (1984) claim that asymmetric information between the stock market and corporate insiders may lead to investments that are negatively impacting the firm value.

overall governance leads to a conservative investment policy. In this paper, I relate managerial risk taking to human capital characteristics and corporate investment decisions in unlisted Belgian firms. No empirical evidence has been provided therein.

Previous empirical research show that qualified human capital increases the probability of risky investments and thus encourage managers to take more risk[8]. As a result, executives may proportionally hire more and keep more highly qualified workers to sustain or even increase the quality of their workforce. Highly educated workers are assumed to be more productive, possess more knowledge and are more skilled (Riley (2001); and Weiss (1995)). Highly educated workers are more hired in sectors that require a large number of technical and managerial jobs (Weiss (1995) and Albrecht (1974)); in industries with more rapidly growing productivity and in sectors that are associated with frequently technological advancements (Autor, Katz and Krueger (1998)). Managers are less likely to layoff highly educated workers because employers do share in the costs and the returns of the training of these highly educated employees (Mincer (1991)). Executives may also proportionally hire and keep more permanent workers to sustain or even increase the quality of the human capital of the firm. Permanent workers are assumed to be more educated, more skilled, have more work and training experience and have lower accident risk than fixed-term workers[9]. My first hypotheses can be stated as follows:

H1a: The entrance of highly educated (permanent) workers is positively related to risky investments.

H1b: The departures of highly educated (permanent) workers is negatively related to risky investments.

The next question I can pose is "Who really benefit from risky investments, the firm or the workers? Pindado, De Queiroz and De La Torre (2010); and Ballot, Fakhfakh, and Taymaz

[8] See Pindado, De Querioz and De La Torre (2010; Beck and Levine (2002) and Galende and Suarez (1999). Qualified human capital can be either measures by the educational level of the workers or their employment contract.

[9] See Handler (1995); Hunt (2000); Hagen (2001); Peck and Theodore (2000); Brown and Sessions (2003)); Guadalupe (2003); Amuedo-Dorantes and Malo (2007); Pheifer (2009); Portugal & Varejão (2009); and De Graaf-Zijl (2012)).

(2007) show that the profits of risky investments are largely diluted among workers. This is especially the case when employees have been intensively involved in the firm's risky investments. Moreover, the part of the return obtained by firms from risky investments is on average lower than the return from investments in property, plants and equipment. Malmendier and Tate (2005) argue that such suboptimal investments by overconfident managers may be prevented if the board of directors employs alternative disciplinary measures which can be sufficient to constrain overconfident executives[10]. More precisely, the use of shorter debt maturity can strongly alter managerial incentives to increase risk (Barnea, Haugen, and Senbet (1980)). Additionally creditors prefer to provide more short-term financing because shorter-term debt provides lenders additionally flexibility to monitor the corporate management with minimum effort (Stulz (2000) and Rajan and Winton (1995)), and reduce or even eliminate agency costs associated with asset substitution problem (Leland and Toft (1996)). My second hypotheses can be stated as follow:

H2a: the proportion of short-term debt is positively correlated with the entrance of highly educated (permanent) workers when more highly educated (permanent) workers are been hired by the firm compared to the mean firm in their sector.

H2b: the proportion of short-term debt is negatively correlated with the departures of highly educated (permanent) workers when more highly educated (permanent) workers are been kept by the firm compared to the mean firm in their sector.

Diamond (1991, 1993) and Sharpe (1991) claim that highly leveraged firms try to avoid suboptimal liquidation by choosing more long-term debt. As a result, highly leveraged firms may be unwilling to use more short-term debt to discourage managerial risk-taking because of the associated high liquidity risk. Furthermore Berk, Stanton and Zechner (2010) and Ofek

[10] Standard incentives such as stock- and option-based compensation are unlikely to discourage risk taking among overconfidence executives. Stock options are used to give executives an incentive to behave in ways that will boost the company's stock price. On the one hand, if the company's stock market price rises above the call price, than executives will experience a direct financial benefit of the difference between the market and the exercise price of the stock options and thus may encourage overconfidence executives to take even more risk. On the other hand, if the market price falls below the stock exercise price at time near expiration of the options, than executives are not obliged to exercise the options. As a result, the option will lapse and executives will not experience the direct financial benefit of exercising the option

(1993) argue that highly risk-averse workers will demand a higher pay associated with a higher employment risk caused by a higher liquidity risk. As a result, the firm may hire more highly educated or permanent workers because they are less risk-averse. On the contrary, But-Jaggia and Thakor (1994) argue that firms are unable to write long-term employment contract in case the firm is highly leveraged and thus the firm faces a higher probability of bankruptcy. Long-term labor contracts do not survive when the firm is in a state of default. I test this indirect effect of leverage by including the entrance/departures of highly educated or permanent workers interacted with leverage as a determinant of debt maturity.

II. Data, Sample Construction, Variable Selection and Summary Statistics

A. Data Sources and Sample Selection

This paper examines the relations between debt maturity structure and the employment relationship for unquoted Belgian companies between 2002 and 2007. The procedure for the data selection of this study is as follows. Each firm is legally required to deposit their annual account at the Belgian National Bank at the end of their fiscal year. The annual accounts of each firm are commercialized by Bureau van Dyck. Financial data is obtained from the BEL-FIRST database of Bureau van Dyck. This study requires that the firm's fiscal year should begin at January, 1 and ends at December, 31 for every year in the sample. The data is distilled from full unconsolidated annual accounts. I require that these annual accounts should be available for each firm and for every fiscal year in my sample, except if the firm is in a legal reorganization procedure or dies during the sample period. One advantage of this kind of annual account is that it provides more detailed financial information of the firm. Survival bias is addressed as follows. The sample contains beside firms who have survived until the end of the sample period also firms in legal reorganization procedures and death firms.

Data about the firm's workforce is obtained from the section social balance sheet of the annual accounts. This section must be completed by every Belgian firm that employs staff

during the fiscal year[11]. The social balance sheet contains valuable information of different aspects of employment in the firm at the end of the fiscal year: e.g., the composition of the workforce (by gender, by socio-professional status and type of contract), the working hours, interim labor, the number of workers (entrance/departures of workers during each fiscal year) and labor costs (Heuse and Saks (2009)).

This paper examines whether board of directors may need to employ disciplinary measures such as shortening debt maturity (debt overhang), which can be sufficient to constrain manager's risk appetite. Only public limited companies are legally liable to install a board of directors[12]. On the contrary, companies with limited liability are only obliged to install a board of directors if it is expressly stated in their memorandum of association. Unfortunately, the data from the annual accounts do not state whether the companies with limited liability have installed a board of directors. As a result, the sample only contains public limited Belgian firms.

Annual changes of numbers of workers for micro firms are very persistent over time[13]. As a result, micro firms are excluded from the sample. Thus, each firm in the sample has at least 10 workers employed at the firm and the balance sheet total should be more than 2 million euros for every year of the sample period. The initial sample period of this study covered the period 2002 to 2010. However, I was confronted with a lot of missing data for entrants and departures of highly educated workers between 2008 and 2010 in the BEL-FIRST database of Bureau van Dyck. As a result, I limit the attention of the study to the period 2002 to 2007. The final sample period of this study covers the period from 2002 to 2007. The most important point is that the data from the social balance sheet provides an unique set of

[11] For example: American firms are not always obliged to reveal valuable information about their workforce. The disclosure of any valuable information about the firm's workforce is largely determined by both competitive and capital market concerns. As a result, separate identification of information about the workforce is made by a very small number of American listed firms (Ballester, Livnat and Sinha (2012)).

[12] http://www.mesotten.be/inhoudstafel.htm

[13] Micro firms are firms that employ less than 10 workers and have a balance sheet of two or less million euros (European Commission (2003)). For example, the 95-percentile for the number of hired workers for micro firms is one between 2002 and 2010.

information and insights about worker characteristics such as educational level of the workers, the gender of the workers, occupations and compensation of the workers at firm level.

Firms in the following sectors (NACE 2008 2-digit codes) are eliminated: financial and insurance activities (64-66); real estate activities (68); legal and accounting activities (69); architectural and engineering activities and technical analysis (71); scientific research and development (72); advertising and market research (73); other professional, scientific and technical activities (74); veterinary activities (75); rental and leasing activities (77); employment activities (78); travel agency, tour operators and other reservation service and related activities (79); security and investigation activities (80); services to buildings and landscape activities (81); office administration, office support and business support activities (82); public administration, defense and compulsory social security (84); education (85); human health activities (86); residential care activities (87); social work activities without accommodation (88); creative, arts and entertainment activities (90); libraries, archives, museums and other cultural activities (91); gambling and betting activities (92); sports activities, amusement and recreation activities (93); activities of membership organizations (94); repair of computers, personal and household goods (95); other personal service activities (96); activities of households as employers of domestic personnel (97); undifferentiated goods- and services-producing activities of private households for own use (98); and activities of extraterritorial organization and bodies (99). Finally, the unbalanced panel of this study contains 4,382 firms.

To ensure the robustness of my results, I examine the distribution of our determinants. The variables are trimmed at the 1st and 99th percentile. Consistent with previous studies on debt maturity, I delete the few observations for which debt maturity proxies and employment relationship variables (ENTHIGH, DEPHIGH, ENTPERM and DEPPERM) are potentially

erroneous (less than zero or greater than 1). The construction and explanation of all of the variables and the used data sources are detailed in Appendix A**.**

B. Variable Selection

1) Debt maturity, Net Leverage, Growth Options, Employment Relationship

Debt maturity measures: Previous studies have largely used debt that matures in 3 year or less or in 5 year or less as principal measures for debt maturity structure (Brockman, Martin, and Unlu (2010)). Other studies have used debt maturity measures where they deduct the debt that matures 3 (5) years or more from one (Barclay and Smith (1995), Johnson (2003); and Data, Iskandar-Datta, Raman (2005)). Two measures for debt maturity structure are been used. The first variable short-term debt is defined as the proportion of total debt maturing in one year or less scaled by total debt. Short-term debt maturity is the debt maturity proxy in the narrow sense. The final measure of debt maturity structure is debt that matures in 5 year or less scaled by total debt.

Net leverage: Net leverage is defined as the ratio of the difference between total debt (short-term debt plus long-term debt) and cash holdings to firm value (book value of total assets). If a firm borrows more money and keeps the proceeds from the new debt issuance as cash within the firm than this transaction raises both the firm's debt and leverage levels. Thus, the levels of firm's net debt (i.e. the difference between debt and cash holdings) and net leverage (i.e. difference between leverage and cash holdings) have not changed by this transaction. Thus, the exact level of firm's leverage should be determined by subtracting the amount of available cash in the firm from the value of outstanding debt (Lambrecht and Pawlina (2012)).

Employment relationship: As discussed in the literature review section, managers may use the firm's employment policy to serve their own interests. Two variables are been used to capture the effect of employment relationship on the debt maturity variables. I discuss the

construction of the variable entrance of highly educated (permanent) full-time equivalent (hereafter FTE) workers in more detail[14]. The variable X_{itj} is defined as the ratio of total hires of highly educated (permanent) FTE workers to total FTE hires for firm i in year t and in 2-digit NACE2008 sector j[15]. An important strength of this ratio is that this ratio fully captures how many highly educated (permanent) FTE workers are been hired during the year. Highly educated FTE workers are defined as workers with either a high school degree or a university degree as their highest educational degree. Then I convert the variable X_{itj} into a standardized normal distribution. If X_{itj} is normal with mean μ_{tj} and standard deviation σ_{tj} , than

$$Z_{itj} = \frac{x_{itj} - \mu_{tj}}{\sigma_{tj}} \quad (1)$$

has mean zero and unit variance. Z_{itj} has the standard normal distribution. This standard normal random variable captures the distance of the proportion entrance of highly educated workers of the firm from the mean of industry. A positive (negative) z-value indicates that firms are (not) hiring proportionally more highly educated workers than other workers compared to the industry average hires of highly educated workers. I name this standardized normal variable ENTHIGH.

The remaining variable that captures the effect of departures of highly educated (permanent) workers are determined in the same way, except that X_{itj} is now defined as the ratio of total departures of highly educated (permanent) FTE workers to total FTE departures for firm i in year t and in 2-digit NACE2008 sector. A detailed overview of the cross-sectional distribution of the employment relationship variables over the sample period 2002 to 2007 is provided in Appendix B.

Growth options: The net added value growth rate of the firm is been used as a proxy for the underinvestment problem of the firm**.** The intuition behind this proxy is threefold. First,

[14] The construction of the variable departures of FTE permanent (highly-educated) workers is similar as the construction of the variable entrance of FTE permanent (highly-educated workers).
[15] One important weakness of this ratio is that this ratio is undefined when both the total hires of highly educated (permanent) FTE workers and the total FTE hires for firm i in year t and in 2-digit NACE2008 sector j equals zero.

Myers (1977) argues in his seminal paper that the potential growth opportunity of a firm depends on the future discretionary investments by the firm. Future discretionary investments include maintenance of plants and equipment, advertising or marketing expenses, expenditures on raw materials, labor expenses or research and development expenses, etc. These discretionary investments can only be carried out if the firm is able to cover all these expenses by their sales. In case the firm's annual turnover is larger than these expenses, than the firm has a positive potential to carry out additional investments (positive potential of growth opportunities). This positive potential or surplus is defined as the added value of a firm. The added value of the firm is the difference between the annual turnover and the operating charges (i.e. discretionary expenses). The added value growth rate is been used to measure the annual changes in growth options per firm in the observed period. Secondly, the ratio research and development expenses to sales is only relevant in case investments in research and development are important to firms. For example firms that by their nature do not invest in research and development may have by definition no future growth opportunities. Finally, the sample consists of unlisted firms. As a result, the traditional measure market-to-book ratio cannot be used.

2) Firm control variables for debt maturity equation

The control variables that I use as determinants of debt maturity are all based on existing literature.

Credit quality: Diamond (1991) model predicts a nonlinear relation between debt maturity and firm's credit quality. His model explains why firms with lower or higher credit rating use more short-term debt and middle rated firms borrow more long-term debt. The intuition behind this prediction is that the degree of information asymmetry between the borrowers and lenders determines the choice of debt maturity for rated firms. In line with previous studies[16],

[16] See Barclay, Marx, and Smith (2003); Johnson (2003); Datta, Iskandar-Datta, and Raman (2005)); Billet, King, and Mauer (2007) and Brockman, Martin, and Unlu (2010)

the natural logarithm of firm value (lnassets) is been used as a proxy for credit quality. In regards to credit quality, additional proxies for credit quality are been used: the natural logarithm of firm age (lnage) and Altman Z-score variable (Billet, King and Mauer (2007)).

Asset maturity: I include a weighted measure of asset maturity (Stohs and Mauer (1996); Johnson (2003); and Brockman, Martin, and Unlu (2010)). Myer's (1977) argues in his seminal paper that firms may reduce the underinvestment problems by matching the maturities of their assets with their liabilities. Agency problems between shareholder and debtholders can also be reduced by matching the maturity of the assets to the maturity of debt. In general, debt that matures before an investment does not induce a suboptimal investment decision. As a result, I posit a negative relation between asset maturity and debt maturity.

Profitability: I include a profitability measure defined as a ratio of earnings before interests, taxes, depreciation and amortization (EBITDA) to the book value of total assets. Meyers (1977) argues that the underinvestment problem might occur when the firm uses more longer-term debt. Corporate managers acting in the interests of the shareholders might oppose projects with a negative net present value because the use of more longer and in essence more riskier debt will absorb a larger portion of shareholder's wealth and the available cash (Benmelech (2006); Baum, Schäfer and Talavera (2007)). As a result, the use of more longer-term debt implies a negative association between longer-term debt and firm performance.

Regulatory dummy: Firms in strongly regulated industries might have fewer incentives to use more shorter-term debt to mitigate the underinvestment problem since corporate managers of firms in strongly regulated industries have less decision authority and perusal over the firm's investment policy. Moreover agency problems associated with debt are less severe for firms in strongly regulated industries (Barclay and Smith (1995) and Johnson (2003)). I use a dummy variable which equals to one for firms in regulated sectors (i.e. NACE2008 2-digit

sectors 10-12, 21,37, 41-43, 49-51 and 53) and zero otherwise (PricewaterhouseCoopers). I expect that firms in strongly regulated industries will use more longer-term debt.

3) Firm control variables for leverage equation

The following firm control variables from previous capital structure studies are been included in the leverage equation.

Creditworthiness: The natural logarithm of firm value (book value of total assets) and the firm age (natural logarithm of age) are been used as proxies for the creditworthiness of the firm. Myers and Majluf (1984) argue that larger and more diversified firms will have higher optimal levels of leverage because of a lower expected probability of going bankrupt. But on the contrary, larger and more diversified firms are likely to face more low asymmetric information problems, and thus may use more equity financing.

Tangibility of assets: the fixed asset ratio is been used as the proxy for tangibility of asset. This proxy is defined as the ratio net property, plant, and equipment by the book value of assets. Firms with fewer tangible assets should find asset substitution less difficult because they can easily exchange low-risk assets for high-risk investments. High-risk investments induce higher profits that are mainly destined to shareholders because bondholders only require a fixed return. Moreover high-risk investments increase debt agency costs and thus lower the firm's optimal leverage (Williamson (1988)). Firms with a low degree of tangibility should also find liquidation values lower, which in turn increases the cost of inefficient liquidation and decreases the firm's optimal leverage (Harris and Raviv (1990)).

Profitability: I include a profitability measure, defined as the ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to book value of assets. Jensen (1986) argues that the control function of debt is more important in firms that generate large cash flows but have lower growth prospects. These firms may force the payout of free cash flow by choosing higher leverage to prevent the cash flow to be wasted in uneconomic

projects. Thus, firms with greater earnings should have higher levels of debt. Moreover, the traditional pecking order theory argues that firms prefer to use more retained earnings in raising their capital. As a result, less profitable firms should have higher levels of debt (Myers and Majluf (1984)).

Expected Marginal Tax Rate: I use three proxies that affect the value of alternative debt tax shield. The first dummy variable equals to one for firms with net operating profits carry forward and zero otherwise. The second dummy variable equals to one for firms with capital tax credits and zero otherwise. The final dummy variable equals to one for firms with interest tax credits and zero otherwise. DeAngelo and Masulis (1980) argue that the existence of non-debt tax shield advantages can reduce the firm's demand for debt and thus lowers the optimal leverage of the firm.

Regulatory dummy: This regulatory dummy is defined in the same way as the control variable for the debt maturity equation. Corporate managers have less decision authority on investments in regulated industries (Smith (1986)). Lack of regulatory commitment to rates provides the manager an incentive to issue more debt because debt mitigates the regulator's incentive to act opportunistically, and thus increases the firm's optimal leverage (Spiegel and Spulber (1994)).

Sample Distribution and Summary Statistics

Table I contains summary statistics for my dependent and right-hand-side variables in both the debt maturity and net leverage regressions.

The mean (median) of debt maturing in 5 years or less is 0.9265 (0.9865) and it does not vary widely across the sample firms. This is shown by the interquartile range of 0.0786 (p75-p25). There is more variation across the sample firms for debt that matures in one year or less (DEBTSHORT)[17]. The firms in my sample tend to have substantially higher short-term debt

[17] I am aware that debt matures in 5 years or less can be seen as long-term debt. As a result, debt that matures in one year or less is included as additional proxy for shorter-term debt.

maturities than the short-term debt maturities found in other studies on debt maturity, but are consistent with those reported in Heyman, Deloof and Ooghe (2007)). The majority of studies on the maturity structure of corporate debt are done by using listed American firms (Brockman, Martin and Unlu (2010); Billet, Dolly-King, and Mauer (2007), Johnson (2003), etc). The used debt maturity proxies are constructed from Compustat Items. One important item of short-term debt is current liabilities (Item #34). Compustat database does not explicitly include other shorter-term debt such as accounts payable, income tax payable or other current liabilities (such as accrued expense, etc.) in their composition of current liabilities. Consistent with Heyman, Deloof and Ooghe (2007), I include next to of financial debt also trade debt, taxes, remuneration and social security liabilities; and other current liabilities in the composition of current liabilities. This paper explicitly examines whether board of directors agree by temporary holding more short-term debt to constrain managerial risk preferences. This can be done by either holding more financial debt, trade debt, other types of short-term debt or short-term debt as whole.

Turning to the employment relationship variables, ENTHIGH has a median of -0.3902 and DEPHIGH has a median of -0.4169. The majority of the executives in my sample firms are not hiring proportionally more highly educated (permanent) workers than other workers. The median CEO tends to keep proportionally more workers on a long-term employment contract than other workers. The standard deviation of the employment relationship variables is not exactly 1 because of rounding errors. Appendix B presents the cross-sectional distribution of the employment relationship variables by sector. The sector breakdown is based on two-digit NACE2008 codes.

INSERT TABLE I

Table II shows the Pearson and Spearman's rank correlation among the dependent and the key variables. The Pearson correlation coefficients are presented left from the diagonal where

the correlation between the same variables are 1. The Spearman's rank correlation coefficients are presented right from the diagonal where the relation between the same key variables is 1.

Observe that ENTHIGH (ENTPERM) is positively correlated to R&D expenditures and positively related to net capital expenditures. A result that is partly consistent with the theory discussed above, more precisely in line with proposition H1a but not with H1b. Further, I find that CEOs that hire proportionally more workers on a long-term contract will seek more risky investments. Executives that allow proportionally more permanent workers leave the firm will pursue more investments in intangible assets such as R&D. Inconsistent with the proposition H1b; the evidence suggests a positive and statistically significant correlation between DEPHIGH and risky investments; and a negative and statistically significant relation between DEPHIGH and tangible assets.

The sample correlations between the employment relationship variables and the debt maturity measures do not give a consistent indication of whether shorter-term debt can be used as an effective mean to mitigate the effects of having excess surplus of human capital in the firm that may encourage managerial risk taking. Lenders are willing to grant 2.30 % more debt that matures in one year or less in case CEOs proportionally hire more highly educated workers. In contrast, the firms receive 2.68 % less debt that matures in five years or less in case firms proportionally hire more highly educated workers than other workers.

INSERT TABLE II

Previous studies show that there is considerable variation in the use of short-term debt maturities across sectors[18]. As a result, I examine the strength of the possible association between short-term debt and employment relationship variables across sectors. It is possible that in certain sectors the disciplinary effect of debt to constrain managerial risk behavior is less strong than sectors where the use of short-term debt is a very important discipline tool to constrain the manager's risk appetite. For example, CEOs in high-tech sectors would be more

[18] See Brockman, Martin and Unlu (2010), Billet, Dolly King and Mauer (2007), etc.

willing to take more risk because it is inherent to their sector to quickly develop new products and thus take more risk compared to manufacturing firms.

Figure 1 shows the unconditional correlation between debt maturity measures and the employment relationship variables ENTPERM and DEPPERM workers across 2-digit NACE2008 sectors[19]. The pairwise correlations of sectors that are significantly different from zero have a lighter shade (p-value ≤ 0.05). Panels A and B show the pairwise correlation of the fraction of debt maturing in one year or less and the variables ENTPERM and DEPPERM across 2-digit NACE2008 sectors in Figure 1 (2). Panels C and D show the pairwise correlation of the fraction of debt maturing in five years or less and employment relationship variables ENTPERM and DEPPERM across 2-digit NACE2008 sectors in Figure 1 (2). The final Figure that shows the unconditional correlation between debt maturity measures and the employment relationship variables ENTHIGH and DEPEDU across 2-digit NACE2008 sectors is constructed in the same way.

In sum, the bar charts show that there exists a large degree of heterogeneity between the shorter-term debt maturity proxies and the employment relationship variables ENTPERM and DEPPERM workers across sectors. Thus, the results of Figure 1 (2) provides an inconsistent indication of whether short-term debt always can be seen as an effective mean to mitigate agency problems caused by executives when they want to take more risk by sustaining or strengthening the existing human capital of the firm. The figures also provide a strong indication of the existing heterogeneity between short-term debt and employment relationship variables across sectors. As a result, I include 2-digit NACE2008 sectorial dummy variables in all the regression models.

INSERT FIGURE 1

INSERT FIGURE 2

[19]This approach of graphically showing the heterogeneity across industries is largely based on the methodology developed by Beck, De Jonghe en Schepens (2012).

I conclude based on the associations between human capital variables and investment policy proxies that CEOs will seek more risky investments in case they hire or keep less highly educated workers. Managers will pursue more investment in low risk assets in case they hire less or keep more highly educated workers. The associations between the firm's investment policy and the employment contract are complex. Further the use of debt as possible disciplinary tool to mitigate managerial risk appetite clearly depends on the firm's sector. The next section tends to provide an answer on the questions whether and to what extent do executives take more risk by changing the firm's human capital. Further, the next section also tends to provide an answer on the question whether and to what extend the empirical associations between debt maturity measures and the employment policy are affected by agency problems between managers and shareholders.

III. Empirical Design and Results

III.a. R&D, CAPEX, and changes in the quality of human capital

This section examines the extent to which changes of the quality of the firm's human capital induce managers to implement risky investment policies. As stated earlier, I expect that hiring more highly educated workers (permanent) will result in lower CAPEX and higher risky investments (R&D). Firms that keep proportionally more highly educated (permanent) FTE workers will result in more risky investments and lower capital expenditures. I estimate both the risky investment and CAPEX regression using Tobit regression model since a large number of firms have zero risky investments and capital expenditures. Table III reports the estimates from Tobit regressions on employment relationship variables, firm control variables and year dummies. To address the possibility that there are omitted variables, all regression specifications include sector (two-digit NACE2008) fixed effects. Table III reports t-statistics that are based on robust standard errors. The control variables that I use as determinants of the investment measures are all based on existing literature (Coles, Daniel and Naveen (2006);

Opler, Pinkowitz, Stulz and Williamson (1999); Bhagat and Welch (1995); and Servaes (1994)). Appendix A provides details on the construction of these control variables from the full annual account items.

The results from Table III imply that hiring proportionally more highly educated FTE workers than other FTE workers implements riskier policy choices, including relatively more investments in research and development expenditures and less investments in tangible assets such as property, plants, and equipment (columns (1, 3 and 5)). The estimated coefficients on ENTHIGH are significant at 1 % in all the model specifications. In case CEOs hire proportionally more highly educated FTE workers than other workers, than the CEOs are provided incentives to increase their risk by reallocating project funds away from low-risk investments (tangible assets) to more riskier investments that are known as intangible assets, ceteris paribus (Coles, Daniel and Naveen (2006)). The results in column 1 show that managers that keep proportionally more highly educated FTE workers tend to seek more investments in particular research and development.

I have assumed in the base model that CEOs may increase their risk appetite by focusing either on hiring or keeping proportionally more highly educated workers than other workers. The unconditional correlation between ENTHIGH and DEPHIGH is 0.6979, indicating that as the CEOs hire proportionally more highly educated workers than other workers, then executives will allow proportionally more highly educated workers leave the firm. As a result, I also investigate the joint effect of ENTHIGH and DEPHIGH on the investment policy variable. The results in Table II show that the estimated coefficient on this interaction term ENTHIGH x DEPHIGH is negative (-0.0012) and significant with R&D as dependent variable. However, one of the main variables of the interaction term (i.e., DEPHIGH) is not statistically significant. As a result, I use the Wald-test to examine whether both the main and interaction effects are jointly significantly differing from zero. The results of the Wald-test are

reported at the bottom of the table. The Wald coefficient tests show that the main and interaction effect are jointly different from zero in Panel A. The economic interpretation is that ENTHIGH effects are mainly driven by managers that keep proportionally more highly educated workers than other workers (DEPHIGH), and DEPHIGH effects are mainly driven by managers that proportionally hire more highly educated workers than other workers (ENTHIGH)[20]. Additionally the high positive correlation between ENTHIGH and DEPHIGH suggests that within a firm, job fluctuations are relatively small. A Wald coefficient test shows that this difference between ENTHIGH and DEPHIGH is highly significant (see columns 1, 2, 5 and 6). The level of employment within a firm does not remain the same; hence, the creation or destruction of jobs within a firm is not considered persistent. The workforce does not remain stable over time and thus the results in table are not exposed by any persistence of the workforce over time.

I empirically examine whether long-term work contracts and highest educational level of workers can be used as substitutes in case CEOs want to increase their risk appetite by changing the quality of the firm's human capital. The empirical associations between ENTPERM (DEPPERM) and the investment policy variables are ambiguous. The results in column 7 suggest a negative and significant association between both employment relationship variables and low-risk investments. I find no statistical significant evidence that managers may increase risky investments by changing the firm's human capital by either hiring or keeping FTE employees on long-term work contract, though none has an unexpected sign. Overall, the signs of the estimates in Table III show that long-term employment contract and the highest educational degree of a worker can be used as substitutes in case managers want to take more risk by changing the quality of the firm's human capital.

[20] The coefficient of the interaction term ENTHIGH * DEPHIGH is -0.0012. The partial derivative of research and development expenditures with respect to ENTHIGH is 0.0040 - 0.0012 x DEPHIGH, and the partial derivative of R&D with respect to DEPHIGH is -0.0008 - 0.0012 x ENTHIGH.

The control variables in the investment policy regressions have interesting estimates with statistical significance. Highly leveraged firms seek significantly more risky investments. Cash-constrained firms are more likely to invest in either high risk or low risk investments. CEOs in less profitable firms will work harder to improve the profitability of the firm by seeking more risky investments with potentially higher returns than low-risk projects, holding all else constant. I do not obtain significant estimates for the control variables measuring growth opportunities, capital structure of the firm, firm age, or profitability, albeit some have an unexpected sign in the fixed asset capital expenditures regressions.

III.b. Debt policy and changes in human capital

My previous results focus on the relation between changes in human capital and firm investment policies. In this section, I examine the empirical association between changes in human capital and current maturity structures of debt.

1. Empirical Design

I estimate simultaneous equations models by using the generalized method of moments (GMM) with net leverage and debt maturity as endogenous variables and the exogenous variables as instruments in the moment conditions (Billet, King and Mauer (2007) and Brockman, Martin and Unlu (2010)). In addition to the inclusion of traditional variables in each equation, I employ a number of other exogenous variables that are been used in previous studies in determining their system of debt maturity and net leverage equations (Barclay, Marx, and Smith (2003), Johnson (2003), Billet, King and Mauer (2007), and Brockman, Martin, and Unlu (2010)). More precisely, I include fixed asset ratio (fixedassetsta), profitability measures (Ebitdata and roa) and expected marginal tax rate (Nol_dum, Interest_dum and Capital_dum) in the net leverage equation. The square of firm size (lnassets2), asset maturity (assetmaturity), and financial distress (altman) are included in the debt maturity equation.

I include as independent variables the interaction between exogenous and endogenous variables (i.e., the interaction between net leverage and employment relationship variables) in my system of equations. A mild degree of nonlinearity may cause inconsistent estimates if the system is estimated with a linear estimation technique. As a result, the system is been estimated by using nonlinear generalized method of moments (GMM), which takes into account that any products involving endogenous variables are themselves endogenous functions of the exogenous variables (Greene (2002) and Billet, King and Mauer (2007)). The standard errors of the estimates are autocorrelation consistent and robust for heteroskedasticity. Consistent with previous studies that apply the non-linear estimation technique, I do not report the goodness of fit measure R^2 because there is no guarantee that the R^2 will lie between their boundaries zero and one.

I take account of both simultaneous equation bias and cross-section correlation of the errors by re-estimating all the models by using either the three-stage least squares (hereafter 3SLS) or the full information maximum likelihood (hereafter FIML) estimation method[21]. The FIML does not require instrumental variables, but it assumes that the equation errors have a multivariate normal distribution. However if the errors are not normally distributed, than the FIML may produce poor results. In contrast, 3SLS estimation method does not assume a particular distribution for the errors (SAS (1999)).

2. Estimation Results

2.1. Joint determinants of Net Leverage and Debt Maturity

The hypotheses H2a and H2b are been tested in this section. The results appear in Table IV, which is divided into two panels based on the worker's employment contract or highest educational degree. In Panel A, I estimate two systems of equations for the pooled unbalanced sample of 4,382 firms where workers are grouped on their employment contract with three

[21] Weak instrumentation and over-identification may lead to biased estimators in the system of two equations. The instruments are selected based on existing literature. I test for each system of equation whether the overidentifying restrictions fit the model to ensure consistency.

different estimation methods (non-linear GMM, FIML, and 3SLS). The first model reports the estimation of a system with a net leverage and short-term debt equation. The second model reports the estimation of a system with a net leverage and debt that matures in five years or less equation. Panel B represents similar regressions but workers are grouped on their highest educational degree. I only report the coefficient estimates of the key variables and the interactions of the key variables of the debt maturity equation in order to conserve space in Table III (and the subsequent tables).

According to hypothesis H2a, a positive association between the use of shorter-term debt (DEBTSHORT and DEBT5) and ENTPERM is expected. The evidence from Table IV supports this hypothesis by showing that the variable entrance of proportionally more FTE permanent worker's estimated coefficient is positive and highly significant irrespective of which shorter-term debt proxy is been used. According to hypothesis H2b, I expect a negative association between the use of shorter-term debt (DEBTSHORT and DEBT5) and DEPPERM. The results of the two-equation system in Panel A reject this hypothesis by showing that the estimated coefficient of this variable is positive and highly significant irrespective to the used debt maturity proxy. This finding suggests that short maturity debt is more likely to be chosen when the firm's investment policy is not directly aligned with the interests of the creditors. Recall that I found a strong negative and significant relation between employment relationship variables (ENTPERM and DEPPERM) and capex in Table II (column 7). The shareholders have an incentive to expropriate debtholder's wealth by substituting into more risky investments (Jensen and Meckling (1976) and Fama and Miller (1972)). Keeping proportionally more workers on a long-term employment contract than other workers provides CEOs with a potentially stronger motive for asset substitution. The results in the first two columns are robust for simultaneous equation biases (columns 3 and 4) and cross-sectional correlation of the error (columns 5 and 6).

I obtain different results when I substitute the entrance (departures) of FTE permanent workers with the entrance (departures) of highly educated FTE workers. ENTHIGH (DEPHIGH) is negatively (positively) associated with the debt maturity variables (columns 7 and 8) and does not support the proposition H2a (b). The coefficients of the variable ENTHIGH (DEPHIGH) in the alternative regression models (columns 9 to 12) are statistically significant at 1 % and display the same sign as the coefficients of the employment relationship variables in the base models (columns 7 and 8). Recall when CEOs that are hiring proportionally more highly educated workers than other workers increase their own ability to pursue risky investments. The evidence from Panel B Highest Educational Degree suggests that when manager's incentive to substitute risky assets for safer assets is high (i.e., hiring less or keeping more highly educated workers), shorter-term debt maturities are more likely to be chosen to mitigate bondholder-shareholder conflicts of interest.

Turning to the estimates on the other key variables, the estimated coefficients of net leverage in all the models of Table IV are positive and highly statistically significant, except for model 7. The positive coefficient of net leverage variable is inconsistent with the findings of Diamond (1991, 1993) and Sharpe (1993) that highly leveraged firms try to avoid suboptimal liquidation by choosing more long-term debt. The negative relation between net leverage and longer debt maturities is inconsistent with findings in Barclay and Smith (1995), Stohs and Mauer (1996), and Johnson (2003) that shorter-term debt maturity increases with net leverage. Further, the evidence suggests that net leverage and debt maturity are not strategic complements from each other (Barclay, Marx, and Smith (1997)).

Berk, Stanton and Zechner (2010) and Ofek (1993) state that highly risk-averse workers (e.g. blue-collar workers) will demand a higher wage premium because firms cannot guarantee long-term employment in case the firm faces a higher liquidity risk. As a result, the firm may hire more permanent or highly educated workers because they are less risk-

averse. The negative sign of the estimated coefficient of the interaction term net leverage * ENTPERM (or DEPPERM) indicates that net leverage attenuates the positive effect of the employment relationship variables on short-term debt maturity variables in Panel A, and thus a highly leveraged firm provides managers more incentives to take more risk by hiring or keeping proportionally more employees on a long-term work contract than other workers. This result is consistent with Berk, Stanton and Zechner (2010) and Ofek (1993) findings that highly leveraged firms may hire more less risk-averse workers. Consistent with Butt-Jaggia and Thakor (1994) prediction, I find that executives are not able to write long-term employment contracts in case the firm faces high risk of bankruptcy (negative sign of interaction term ENTPERM x net leverage). The disciplinary role of shorter-term debt to mitigate managerial risk-taking may be less pronounced when we take into account the interactions between employment relationship variables (ENTPERM and DEPPERM) and the capital structure of the firm.

In contrast, the coefficient of the interaction between entrance (departures) of highly educated workers and net leverage is positive (negative) and highly significant in all the models in Panel B, except for models 7 and 8. Creditors are more likely to lend short-term funds in case managers in highly leveraged firms are less encouraged to take more risk by investing in more risky NPV projects when they proportionally hire more highly educated workers than other workers compared to managers in firms with low levels of debt. In all the models of Panel A, the coefficients of net added value growth rate are not significantly different from zero.

INSERT TABLE IV

I evaluate the economic significance of my key findings in Table IV. The employment relationship variables are standard normalized variables. For example the variable ENTDEP captures how much the firm's proportion of newly recruited permanent workers deviates from

the industry average proportion of newly hired permanent workers. The majority of the firms in my sample are found in the whole trade sector (2-digit NACE2008 code 46). If firms hire proportionally the same number of permanent workers than the average of the Wholesale trade sector, than the median short-term debt (DEBTSHORT) increases of 1.10 % (from 0.9890 to 1.000) in 2007[22]. In case, the CEO decides to hire proportionally more permanent workers which equals one standard deviation to the right from the mean average firm in the same sector, than the median short-term debt (DEBTSHORT) increases of 8.91 % (from 0.9890 to 1.0857)[23]. In case managers tend to keep 1 standard-deviation more permanent workers than the average of the wholesale sector, than the median DEBTSHORT decreases by 17.37 % (from 0.9890 to 0.8426) in 2007[24]. I find similar results in case I extend the definition of debt that matures in one year or less to five years or less.

All else equal, lenders are willing to grant 29.87 % (from 0.9890 to 1.4103) more short-term debt than the median DEBTSHORT firm compared to 12.80 % (from 0.9250 to 1.0609) increase for debt that matures in five years or less than the median DEBT5 firm in case the proportion of newly hired highly educated workers deviates one standard deviation to the left from the average of the wholesale sector in 2007[25]. When DEPHIGH deviates one standard error to the right from the average mean, the median DEBTSHORT increases of 38.33 % (from 0.9890 to 1.6037) and the median DEBT5 increases of 14.45 % (from 0.9250 to

[22] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The coefficient of ENTPERM is 0.0857 (column 1, Table IV). The median ENTPERM in the wholesale sector in 2007 is -0.574654. The standard deviation of ENTPERM in the wholesale sector in 2007 is one.

[23] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The coefficient of ENTPERM is 0.0857 (column 1, Table IV). The median ENTPERM in the wholesale sector in 2007 is -0.574654. The standard deviation of ENTPERM in the wholesale sector in 2007 is one.

[24] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The coefficient of DEPPERM is 0,1574 (column 1, Table IV). The median DEPPERM in the wholesale sector in 2007 is 0.333855. The standard deviation of DEPPERM in the wholesale sector in 2007 is one.

[25] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The median DEBT5 in the same sector in 2007 is 0.9250952. The coefficient of ENTEDU is -0,4103 (column 9, Table IV) and -0.0609 (column 10, Table IV). The standard deviation of ENTEDU in the wholesale sector in 2007 is one. The median ENTEDU in the same sector in 2007 is -0.434764.

1.0813)[26]. Overall, the evidence in Table IV suggests that short-maturity debt does not mitigate agency costs of debt by constraining managerial risk preferences.

2.2. Extensions

1. Debt maturity significantly influences the expected probability of bankruptcy

The expected probability of bankruptcy of a firm may influence the firm's debt maturity policy. Existing empirical studies show that firms readjust their capital structure if they are highly leveraged and that firms with a high portion of longer-term debt are more willing to reduce debt in a state of financial distress compared to firms with a high portion of shorter-term debt (Mella-Barral (1999); Anderson and Sundaresan (1996); etc.) Dangl and Zechner's (2006) theoretical model predicts that firms with high bankruptcy costs induce a stronger incentive to use more shorter-term debt since this reduces the expected probability of bankruptcy. Thus, lowering bankruptcy costs move the firm's local maximum for finite debt maturities towards shorter-term debt maturities and increases the firm's debt capacity by efficiently using the firm's optimal leverage.

Financial distress may also influence the corporate management decision whether to use the firm's employment policy to further their own interests. The core periphery theory argues that financially distressed firms provide permanent workers a higher degree of job security and better working conditions on the expense of fixed-term workers when the firms in in state of financial distress[27]. Financially constrained firms do not tend only to hire principally more fixed-term workers, but also use them to absorb an important part of the total employment volatility. As a result, the firm's core workforce becomes relative less volatile (Caggese and Cuñat (2008)). Given that the effects of shortening debt maturity and employment relationship may depend on financial distress, I re-estimate the models separately for financially distressed firms and financially sound firms. Firms facing a high probability of bankruptcy are indicated

[26] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The median DEBT5 in the same sector in 2007 is 0.9250952. The coefficient of DEPEDU is 0.6037 (column 9, Table IV) and - 0,0813 (column 10, Table IV). The standard deviation of DEPEDU in the wholesale sector in 2007 is one. The median DEPEDU in the same sector in 2007 is -0.610835.

[27] See Pheifer (2009); Amuedo-Dorantes and Malo (2004); Booth, Francesoni and Frank (2002a); Haltiwanger (1984) and Rosen (1982)

by an Altman Z-score less than 1.81 (Denis and Mihov (2003) and Billet, King and Mauer (2007)). The empirical results are reported in Table V

INSERT TABLE V

The results support the key findings of Table V for the panel Employment contract with a positive and highly significant coefficients of the employment relationship variables ENTPERM and DEPPERM for financially distressed firms irrespective whether which debt maturity proxy is been used. I obtain similar results when I move from my subsample financially distressed firms to the subsample non-financially distressed firms for the panel employment contract. In line with subsection B.1., I repeat the regression analysis by substituting both variables ENTPERM and DEPPERM with variables ENTHIGH and DEPHIGH. Again the results for financially distressed firms in the panel highest educational degree are consistent with the results in Table IV.

Overall, the findings of the subsamples financially distressed firms and non-financially distressed firms confirm the earlier estimation results of the systems of two equations in Table IV. The evidence from Table V suggest that short-term debt cannot reduce the agency problems between managers and shareholders[28].

2. *Forward and backward-looking investment behavior of CEOs*

I investigate whether my main results in subsection B.1 are robust in case managers tend to frame history or future to determine their risk appetite. In general, firm's behavior can be classified into two decision models: a backward-looking and a forward-looking decision model. The experience-based decision model is a backward-looking model because managers adjust their existing behavior without a great deal of reference to the future. A forward-looking model implies that decision making is based on a cognitive image of the future (Chen (2008)). For example, if managers are forward-looking than they possess valuable information

[28] Johnson (2003) argues that the sign of the coefficient of growth options may reverse in case I include extreme values of growth options in the regression models. However excluding these values could result into biased view on the empirical relation between growth options and net leverage/debt maturity for either financially sound and financially distressed firms. As a result, I include the extreme values of growth options in my regression models.

that they will have more investment opportunities (positive added value) in the near future. As a result, managers will be more encouraged to take more risk in case they have useful information about future positive growth opportunities.

To address these potential concerns, I sort firms into two groups according to the manager's forward-looking behavior: (1) CEOs with a positive forward-looking behavior and (2) CEOs with a negative forward-looking behavior. The forward-looking measure is defined as the ratio net added value growth in year t to net added value growth in year t+1. Further, I also examine the difference in the use of short-term debt across firms with negative and positive backward-looking behavior. The backward-looking measure is the ratio of net added value growth in year t to net added value growth rate in year t-1[29]. I re-estimate the system of equations separately for positive forward-looking (backward-looking) and negative forward-looking (backward-looking) CEOs. The empirical results are presented in Table VI.

INSERT TABLE VI

As shown in Panel employment contract in Table VI, the ENTPERM (DEPPERM) is positively related to the debt maturity measures in all regressions irrespective whether I sort the firms according to their backward- or forward-looking investment behavior of their CEOs. The evidence from this panel suggests that shorter debt maturities are more likely to be chosen when the firm's investment policy is not in line with the interests of the creditors.

How economically significant are the differences between CEOs with either positive or negative forward-looking investment behavior? For example, CEOs with positive forward-looking investment behavior decide to hire one standard deviation more permanent workers than the average of the wholesale sector, than the median DEBTSHORT increases of 8.80 % (from 0.9890 to 1.0844) and the median DEBT5 increases of 15.79 % (from 0.9250 to

[29] Billet, King and Mauer (2007) apply a similar approach in their paper where they empirically examine whether the negative relation between leverage and market-to-book ratio reflects historical market timing of equity issues.

1.0985) in 2007[30]. In contrast, CEOs that are aware of potentially negative future investment opportunities decide to hire one standard deviation more workers on a long-term employment contract than the average of the wholesale sector, than the median DEBTSHORT increases from 0.9890 to 1.0792 and median DEBT5 increases of 14.22 % (from 0.9250 to 1.0784) in 2007[31]. The differences between executives with either positive or negative forward-looking investment behavior are economically negligible. The same computation for managers with positive backward-looking shows an increase of one standard-deviation of ENTPERM, implying an increase of the median DEBTSHORT of 22.26 % (from 0.9250 to 1.2721) and an increase of debt that matures in five years or less from 0.9865 to 1.0992[32]. When ENTPERM increases with one standard deviation, than median DEBTSHORT increases of 8.04 % and an increase of DEBT5 of 14.10 % for managers with negative back-ward looking behavior in the wholesale sector in 2007[33]. Again, I conclude that the differences between managers with positive or negative backward-looking investment behavior are economically inappreciable.

In Panel Highest Educational Degree of Table VI, the empirical results provide limited support for the H2a hypothesis. The estimated coefficient on ENTHIGH is negative but not always statistically different from zero. For example for CEOs with a positive forward-looking investment behavior, ENTHIGH has a significantly negative coefficient only in the non-linear 3SLS with dependent variable DEBTSHORT. More interestingly, the evidence in

[30] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The coefficient of ENTPERM in DEBTSHORT equation is 0.0844 (column 1, Table VI Panel Employment Contract, Positive Forward-Looking Investment Behavior).
The coefficient of ENTPERM in DEBT5 equation is 0.0985 (column 1, Table VI Panel Employment Contract, Positive Forward-Looking Investment Behavior). The median DEBT5 in the wholesale sector in 2007 is -0.9251. The standard deviation of ENTPERM in the wholesale sector in 2007 is one.

[31] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The coefficient of ENTPERM in DEBTSHORT equation is 0.0792 (column 5, Table VI Panel Employment Contract, Negative Forward-Looking Investment Behavior).
The coefficient of ENTPERM in DEBT5 equation is 0.1556 (column 6, Table VI Panel Employment Contract, Negative Forward-Looking Investment Behavior). The median DEBT5 in the wholesale sector in 2007 is -0.9251. The standard deviation of ENTPERM in the wholesale sector in 2007 is one.

[32] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The coefficient of ENTPERM in DEBTSHORT equation is 0.2721 (column 1, Table VI Panel Employment Contract, Positive Backward-Looking Investment Behavior).
The coefficient of ENTPERM in DEBT5 equation is 0.0992 (column 2, Table VI Panel Employment Contract, Positive Backward-Looking Investment Behavior). The median DEBT5 in the wholesale sector in 2007 is -0.9251. The standard deviation of ENTPERM in the wholesale sector in 2007 is one.

[33] The median SHORTDEBT in wholesale sector (2-digit NACE2008 code is 46) in 2007 is 0.9889785. The coefficient of ENTPERM in DEBTSHORT equation is 0.1464 (column 1, Table VI Panel Employment Contract, Negative Backward-Looking Investment Behavior).
The coefficient of ENTPERM in DEBT5 equation is 0.3830 (column 2, Table VI Panel Employment Contract, Negative Backward-Looking Investment Behavior). The median DEBT5 in the wholesale sector in 2007 is -0.9251. The standard deviation of ENTPERM in the wholesale sector in 2007 is one.

columns (2) and (4) support my H2b, with a negative and statistically significant coefficient on DEPHIGH. As a result, lenders are willing to provide short-term debt (DEBT5) in case managers with positive forward-looking investment behavior are seeking more risky investments by keeping proportionally more highly educated employees than other employees. Moreover, the use of more debt that matures in five year or less can strongly alter managerial incentives to increase risk and may solve the potential misalignment of interests between shareholders and managers.

Overall, the findings confirm the earlier results mainly for my Panel Employment Contract. Further, the evidence also suggests that time consideration has a negligible influence on the empirical relations between debt maturity proxies and employment relationship variables ENTPERM and DEPPERM.

3. Investment policy, capital structure and changes in quality of the human capital

Brockman, Martin and Unlu (2010) argue that it is important to distinguish the effects of managerial risk incentives on the firm's investment (RD and CAPEX) and financing policies (net leverage and debt maturity). Coles, Naveen and Lalitha (2006) argue that shareholders select the optimal combination of delta and vega to implement the most convenient, value-maximizing investment and financial policies. In line with their reasoning, I examine whether board of directors may indirectly choose a combination of the employment relationship variables by temporarily holding more short-term debt to implement the most convenient value-maximizing investments and financial policies. I examine the importance of the associations between financial and investment policies by estimating a system with four equations. Beside the key variables and the interactions between the key variables, I include the variables lnage, lnassets, ROA, surplus of cash and sales growth as instruments in the

investment policy equations (Brockman, Martin and Unlu (2010) and Coles, Naveen and Lalitha (2006)[34]. The empirical results are reported in Table VII.

The results from the Panel employment contract in Table VII support my main findings from Table III. In columns 2, 6 and 10, the coefficients of the variables ENTPERM and DEPPERM have the expected sign and are highly statistically significant at 1% in the DEBT5 regression and are robust for all the estimation methods (non-linear GMM, non-linear 3SLS and non-linear FIML). The results in the second and tenth column of Panel A imply that lenders are willing to grant debt that matures in one year or less in case managers are either hiring more permanent workers than other workers or deciding that proportionally more workers on a long-term contract can leave the firm.

The evidence from this Panel also confirms that firms that either hire more or keep fewer workers on a long-term employment contract will seek fewer investments in tangible assets such as property, plant and equipment (columns 3, 7 and 11). I find that both variables ENTPERM and DEPPERM are negatively and significantly correlated with research and development expenditures (columns 8 and 10). This finding suggests that managers pursue risky investments by either hiring less or keeping proportionally more permanent workers in case the firm's investment and financing policy are jointly determined.

Leland and Toft (1996) argue in their seminal paper that short-term debt maturities can reduce manager's ability to seek risky investments. As a result, I would expect that a negative association between the employment relationship variables and short-term debt maturity proxies. The reasoning is that managers pursue more risky investments in case less permanent workers are been hired or more workers on a long-term employment contract leave the firm. However, the results in columns 2, 6, and 10 imply that lenders are willing to grant more debt that matures in five years or less in case managers hire proportionally more permanent

[34] Key variables in the investment equation are debt maturity variables (DEBTSHORT and DEBT5), net leverage and employment relationship variables (ENTHIGH, DEPHIGH, ENTPERM and DEPPERM) and growth opportunities (net added value growth rate). Brockman, Martin and Unlu (2010) note, the estimation procedure can lead to biased estimates when the used instruments are very weak, and thus are not orthogonal to the error terms in the investment or financing equations.

workers or allow permanent workers to leave the firm. The evidence suggests that short-maturity debt does not mitigate agency costs of debt by constraining managerial risk preferences. However, short-term debt disciplines the employment relationship by constraining cash flow that is probably destined to permanent workers in case managers are hiring proportionally more permanent workers (wages) or when employees on a long-term work contract leave the firm (loss of human capital in case permanent workers quit their job or severance payments in case of compulsory redundancy).

The results from the Panel Highest Education Degree provide limited support for my key findings in Table IV. Specifically, the ENTHIGH coefficients are negative and statistically significant at 1 % in all the net capital expenditures equations (columns 3, 6 and 9); and positive and statistically significant in the research and development expenditures equations (columns 8 and 12)[35]. The employment relationship variables ENTHIGH and DEPHIGH are positively correlated with DEBSHORT, but are not statistically significant.

INSERT TABLE VII

In sum, I find strong evidence that board of directors are indirectly choosing a combination of ENTPERM and DEPPERM by temporarily holding more short-term debt to implement the most convenient value-maximizing investment and financial policies. The evidence for the panel Highest educational degree provides little support for this proposition.

IV. Conclusion

This paper analyses how executives may use the firm's human capital to take more risk and how both the firm's board of directors and creditors may deal with the executive's increased appetite to risk?

Managers may become overconfident when they are aware that they have the disposal of highly qualified workers to carry out their risky investments even with very uncertain

[35] I have excluded industry and year fixed effects due to singularity of the matrix of the FIML estimated model 4.

expected returns. Moreover, overconfident managers may gear the firm's employment policy to mainly serve their own interests on the expense of shareholder's interests (maximizing shareholder value) by sustaining and even strengthen the quality of the firm's human capital.

The quality of the workforce can be sustained or even strengthened by hiring and keeping proportionally more highly educated workers or employees on a long-term work contract in comparison to an average firm. The first hypotheses examine whether CEOs that hire or keep more highly educated (permanent) workers will seek more risky investments. I provide strong empirical evidence that CEOs are provided incentives to take more risk in case they proportionally hire more highly educated workers than other workers.

Previous research has shown that profits of risky investments are largely diluted among workers. This is especially the case when workers are intensively involved in projects with uncertain returns. More importantly, the part of the return obtained from risky investments is on average lower than the return from investments in property, plants and equipment. As a result, board of directors may prevent executives to pursue suboptimal investments by using more short-term debt (Barnea, Haugen, and Senbet (1980)). Inconsistent with the expectation, I provide a consistent picture that short-term debt cannot reduce agency costs of debt associated with the quality of the firm human capital, except when managers possess valuable information about future investment opportunities.

REFERENCES

Agrawal, A., and Knoeber, C. R. (1996). Firm Performance and Mechanisms to Control Agency Problems between Managers and Shareholders. The Journal of Financial and Quantitative Analysis 31, 377-397.

Aivazian, V.A.; Ge, Y; Qiu, J.P. (2005). Debt maturity structure and firm investment. Financial Management 34, 107-119.

Albrecht, J. (1974). The Use of Educational Information by Employers. Econometric Society Meetings.

Amuedo-Dorantes, C., and Malo, M. (2004). Employment Expectations and Gross Flows by Type of Work Contract. William Davidson Institute Working Paper 646.

Amuedo-Dorantes, C., and Malo, M. (2007). How Are Fixed-term Contracts Used by Firms? An Analysis Using Gross Job and Worker Flows. Working Paper Series .

Anderson, R.W. and Sundaresan, S. (1996). Design and valuation of debt contracts. Review of Financial Studies 9, 37-68.

Autor, D., Katz, L., and Krueger, A. (1998). Computing Inequality: Have Computers Changed the Labor Market? The Quarterly Journal of Economics 113, 1169-1213.

Ballester, M., Livnat, J., and Sinha, N. (2002). Labor Costs and Investments in Human Capital. Journal of Accounting Auditing and Finance 17, 351-373.

Ballot, G; Fakhfak, F.; Taymaz, E.; (2006), Who benefits from Training and R&D, the Firm or the Workers?, British Journal of Industrial Relations 44, 473-495
Barclay, M., Marx, L., and Jr., C. S. (2003). The joint determination of leverage and maturity. Journal of Corporate Finance 9, 149-167.
Barclay, M.J. and Smith Jr., C.W. (1995). The Maturity Structure of Corporate Debt. Journal of Finance 50, 609-632.
Barclay, M.J., Marx, L.M. and Smith Jr., C.W. (1997). Leverage and Maturity as Strategic Complements. Working paper University of Rochester.
Barnea, A.; Haugen, and R.A.; Senbet, L.W.; (1980). A Rationale for Debt Maturity Structure and Call Provisions in the Agency Theoretic Framework, The Journal of Finance 35, 1223-1334
Baum, C., Schäfer, D., and Talavera, O. (2007). The Effects of Short-term Liabilities on Profitability: The Case of Germany. Discussion Papers German Institute for Economic Research 635.
Beck, T. , De Jonghe, O. and Schepens, G. Bank Competition and Stability: Cross-Country Heterogeneity, Journal of Financial Intermediation, Forthcoming.
Beck, T. and R. Levine; (2002), Industry Growth and Capital Allocation: Does Having a Market- or Bank-Based System Matter?, Journal of Financial Economics 64, 147-180.
Benmelech, E. (2006). Managerial Entrenchment and Debt Maturity: Theory and Evidence. NBER and Harvard Working Paper Series.
Berk, J., Stanton, R., and Zechner, J. (2010). Human capital, bankruptcy and capital structure. Journal of Finance 65, 891-926.
Bhagat, S., Welch, I., (1995). Corporate research and development investments: International Comparison. Journal of Accounting and Economics 16, 443-470
Billet, M., King, T., and Mauer, D. (2007). Growth Opportunities and the Choice of Leverage, and Covenants. Journal of Finance 62, 697-730.
Booth, A., Francesoni, M., and Frank, J. (2002a). Temporary jobs: stepping stones or dead ends? The Economic Journal 112, 183-213.
Brockman, P., Martin, X., and Unlu, E. (2010). Executive Compensation and the Maturity Structure of Corporate Debt. The Journal of Finance, 1123-1161.
Bronars, S., and Deere, D. (1991). The threat of unionization, the use of debt, and the preservation of shareholder wealth. Quarterly Journal of Economics 106, 231-254.
Brown, S., and Sessions, J. (2003). Earnings, education, and fixed-term contracts. Scottish Journal of Political Economy 50, 492-506.
Butt-Jaggia, P., and Thakor, A.V., (1994), Firm-specific human capital and optimal capital structure, International Economic Review 35, 283–308.
Caggese, A., and Cuñat, V. (2008). Financing Constraints and Fixed-term Employment Contracts. Economic Journal 118, 2013-2046.
Chen, W. (2008). Determinants of Firms' Backward- and Forward-Looking Rand D Search Behavior. Organization Science 19, 609-622.
Coles, J., Naveen, D., and Lalitha, N. (2006). Managerial incentives and risk taking. Journal of Financial Economics 79, 431–468.
Commission, E. (2003). Commission recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. Official Journal of the European Union L 124/26, L124/36 - L124/41.
Cronqvist, H.; Heyman, F.; Nilson, M.; Svaleryd, H.; Vlachos, J.; (2009), Do Entrenched Managers Pay Their Workers More?, The Journal of Finance 64, 309–339.
Dangl, T. and Zechner, J. (2006). Debt Maturity and the Dynamics of Leverage. Working Paper Series.
Datta, S., Iskandar-Data, M., and Ramna, K. (2005). Managerial stock ownership and the maturity structure of corporate debt. Journal of Finance, 2333-2350.
De Graaf-Zijl, M. (2012). Compensation of on-call and fixed-term employment: the role of uncertainty. The Manchester School 80, 6-27.
DeAngelo, H., and DeAngelo, L. (1991). Union negotiations and corporate policy. Journal of Financial Economics 30, 3-43.
DeAngelo, H., and Masulis, R. (1980). Optimal Capital Structure Under Corporate and Personal Taxation. Journal of Financial Economics 8, 3-30.
Denis, D. J., *and* Mihov, T.V.; *(*2003), The choice among bank debt, non-bank private debt, and public debt: Evidence from new corporate borrowings, Journal of Financial Economics 70, 3–28.
Diamond, D. (1991). Debt Maturity Structure and Liquidity Risk. Quarterly Journal of Economics 106, 341-368.
Diamond, D. (1993). Seniority and Maturity of Debt Contracts. Journal of Financial Economics 33, 341-368.
Dolly-King, T; Wen, M.W.; (2011). Shareholder and Bondholder Governance, and Managerial Risk-taking, Journal of Banking and Finance 35, 512- 531.

Doing Business guide: practical information - regulatory environment Belgium. (n.d.). Retrieved December 23, 2012, from PricewaterhouseCoopers: http://www.pwc.be/en/doing-business-guide/practical-information/regulatory-environment-belgium.jhtml

Easterwood, J., and Kadapakkam, P. (1994). Agency Conflicts, Issue Costs, and Debt Maturity. Quarterly Journal of Business and Economics 33, 69-80.

Faleye, O., and Trahan, E. (2011). Labor-Friendly Corporate Practices: Is What is Good for Employees Good for Shareholders? Journal of Business Ethics, 1-27.

Galende, J.; Suarez, I; (1999), A Resource-Based Analysis of the Factors Determining a Firm's R&D Activities, Research Policy 28, 891-905.

Gatchev, V.A.; Spindt, P.A.; Tarhan, V. (2009). How do firms finance their investments? : The relative importance of equity issuance and debt contracting costs. Journal of Corporate Finance 15, 179-195.

Graham, J.R.; Harvey, C.R. (2001), The theory and practice of corporate finance: evidence from the field. Journal of Financial Economics 60, 187-243.

Greene, William H., (2002), Econometric Analysis (Prentice Hall, Englewood Cliffs , NJ).

Grinstein, Y. (2006). The disciplinary role of debt and equity contracts: Theory and tests. Journal of Financial Intermediation 15, 419–443.

Guadalupe, M. (2003). The hidden costs of fixed term contracts: the impact on work accidents. Labour Economics 10, 339-357.

Hagen, T. (2001). Does Fixed-Term Contract Employment Raise Firms' Adjustment-Speed? Evidence from an Established Panel for West-Germany. Discussion Paper No. 01-57.

Haltiwanger, J. (1984). The Distinguishing Characteristics of Temporary and Permanent Layoffs. Journal of Labor Economics 2, 523-538.

Handler, J. (1995). The Poverty of Welfare Reform. New Haven: Yale University Press.

Hanka, G. (1998). Debt and the terms of employment. Journal of Financial Economics 48, 245-282.

Harris, M., and A., Raviv. (1990). The Theory of Capital Structure. The Journal of Finance, 297-355.

Hellwig, Martin, 2000, On the economics and politics of corporate finance and corporate control, in XavierVives, ed.: Corporate Governance: Theoretical and Empirical Perspectives (Cambridge University Press, Cambridge , UK).

Heuse, P., and Saks, Y. (2009). Labour flows in Belgium. Working Paper Research National Bank of Belgium 162.

Heyman, D., Deloof, M., and Ooghe, H. (2008). The Financial Structure of Private Held Belgian Firms. Small Business Economics 30, 301-313.

Hirshleifer, D.; Low, A.; and Hong Teoh, S.; (2012). Are Overconfident CEOs Better Innovators? Journal of Finance 67, 1457-1498.

Hunt, J. (2000). Firing Costs, Employment Fluctuations and Average Employment: An Examination of Germany. Economica 67, 177-2002.

Huyghebaert, N., (2006) On the Determinants and Dynamics of Trade Credit Use: Empirical Evidence from Business Start-ups. Journal of Business Finance and Accounting 33, 305-328.

Jensen, M. (1986). Agency Costs of Free Cash Flow, Corporate Finance and Takeovers. American Economic Review 76, 323-339.

Jensen, M., and Meckling, W. (1976). Theory of the firm: managerial behavior, agency costs, and ownership structure. Journal of Financial Economics 3, 305-360.

Johnson, S. (2003). Debt Maturity and the Effects of Growth Opportunities and Liquidity Risk on Leverage. Review of Financial Studies 16, 209-236.

Knopf, J. D.,Nam. J;, and Thornton Jr, J.H.;. *(*2002*)* The volatility and price sensitivities of managerial stock option portfolios and corporate hedging, Journal of Finance 57, 801–812.

Lambert, R.A.; Larckere, D.F.; Verrecchia, R.E.; (1991), Portfolio considerations in valuing executive compensation, Journal of Accounting Research 29, 129–149.

Lambrecht, B., and Pawlina, G. (2012). A Theory of Net Debt and Transferable Human Capital. Review of Finance.

Leland, H. E., *and* Toft, K.B.; (1996), Optimal capital structure, endogenous bankruptcy, and the term structure of credit spreads, Journal of Finance 51, 987–1019.

M.J. Barclay, and Smith, C. (1995). The Maturity Structure of Corporate Debt. The Journal of Finance 50, 609-631.

Malmendier, U., and Tate, G. (2005). CEO Overconfidence and Corporate Investment. The Journal of Finance 60, 2661-2700.

Mella-Barral, P. (1999). The dynamics of default and debt reorganization. Review of Financial Studies 12, 535-578.

Michelle, H.; Rajgopal, S.; Shevlin, T.J.; (2004). Large sample evidence on the relation between stock option compensation and risk taking. Working paper series University of Michigan and University of Washington.
Mincer, J. (1991). Human capital, technology, and the wage structure: what do time series show? , National Bureau of Economic Research Working Paper No. 3581.
Myers, S. (1977). Determinants of Corporate Borrowing. Journal of Financial Economics 5, 147-175.
Myers, S., and Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of financial economics 13, 187-221.
Ofek, E. (1993). Capital Structure and Firm Response to Poor Performance: An Empirical Analysis. Journal of Financial Economics 34, 3-30.
Opler, T., Pinkowitz, R., Stulz, R., Williamson, R. (1999). The determinants and implications of corporate cash holdings. Journal of Financial Economics 52, 3 – 46.
Pagano, M. and Volpin, P. (2005). Managers, Workers, and Corporate Control. Journal of Finance 60, 843-870.
Pagano, M., and Volpin P., 2002, Managers, workers, and corporate control, CEPR discussion paper no. 3649.
Peck, J., and Theodore, N. (2000). Commentary: 'Work First': Workfare and the Regulation of Contingent Labour Markets. Cambridge Journal of Economics 24, 119-138.
Pheifer, C. (2009). Fixed-term Contracts and Employment Adjustment: An Empirical Test of the Core-Periphery Hypothesis Using German Establishment Data. The Economic Record 85, 92-107.
Pindado, J.; De Queiroz, V.; De la Torre, C.; (2010). How Do Firm Characteristics Influence the Relationship between R&D and Firm Value?, Financial Management 39, 757-782.
Portugal, P., and Varejão, J. (2009). Why do Firms Use Fixed-Term Contracts? Discussion Paper Series IZA 4380.
Rajan, R., and Zingales, L. (1995). What Do We Really Know About Capital Structure? Some Evidence From International Data. Journal of Finance 50, 1421-1460.
Riley, J. (2001). Silver signals: Twenty-five years of screening and signaling. Journal of Economic Literature 39, 432-478.
Rosen, S. (1982). Authority, Control and the Distribution of Earnings. Bell Journal of Economics 13, 311-323.
SAS Institute Inc. (1999), SAS/ETS User's Guide, Version 8, Cary, NC: SAS Institute Inc. 1546 pp.
Servaes, H., (1994). Do takeover targets overinvest? Review of Financial Studies 7, 253-277.
Sharpe, S. (1991). Credit Rationing, Concessionary Lending, and Debt Maturity. Journal of Banking and Finance 15, 581-604.
Shyu, Y., and Lee, C. (2009). Excess Control Rights and Debt Maturity Structure in Family-Controlled Firms. Corporate Governance: An International Review 17, 611–628.
Smith, C. (1986). Investment banking and the capital acquisition process. Journal of Financial Economics 15, 3-29.
Spiegel, Y., and Spulber, D. (1994). The capital structure of a regulated firm. RAND Journal of Economics 25, 424-440.
Stochs, M.; Mauer, D.; (1996). The Determinants of Corporate Debt Maturity Structure. Journal of Business 69, 279-312.
Stock, J.; Wright, J.H.; Yogo, M.; (2002); A Survey of Weak Instruments and Weak Identification in Generalized Method of Moments, Journal of Business & Economic Statistics 20, 518-529.
Stohs, M., and Mauer, D. (1996). The Determinants of Corporate Debt Maturity Structure. Journal of Business 48, 279-312.
Stulz, R. (1990). Managerial Discretion and Optimal Financing Policies. Journal of Financial Economics 43, 3-27.
Weiss, A. (1995). Human Capital vs. Signaling Explanation of Wages. Journal of Economic Perspectives 9, 133-154.
Williamson, O. (1988). Corporate Finance and Corporate Governance, Journal of Finance 43, 567-591.

Appendix A
Variable Definitions and Data Sources

Variable	Definition and Data Source
Asset Maturity	Book value-weighted average of the maturities of property plant and equipment and current assets, computed as (gross property, plant, and equipment (Item #22/27)/total assets (Item #20/58)) x (gross property, plant, and equipment (Item #22/27) /depreciation expense (Item #630)) + (current assets (Item #29/58)/total assets (Item #20/58)) x (current assets (Item #29/58)/operational charges (Item #60/64)). Data source: BEL-FIRST database of Bureau van Dyck.
CAPEX	Ratio of annual changes of net fixed assets to total asset (Item #20/58). Net fixed assets is the sum of (Item #22) , (Item #23), (Item#24), (Item#25), (Item#26) and (Item#27).
Capital tax refund dummy	Dummy variable equals to one for firms who receive a capital subsidy from the Belgian government (Item #9125).and zero otherwise. Data source: BEL-FIRST database of Bureau van Dyck.
DEBT5	Ratio of the sum of debt with a maturity between one years and 5 year included (Item #891.17a) and short-term debt (Item #42/48) to total debt (Item #17/49). Data source: BEL-FIRST database of Bureau van Dyck.
DEBTSHORT	Ratio of short-term debt (≤ one year) (Item #42/48) to total debt (Item #17/49). Data source: BEL-FIRST database of Bureau van Dyck.
DEPHIGH	I define the variable X_{itj} as the ratio of total departures of highly educated FTE workers to total FTE departures for firm i in year t and in 2-digit NACE2008 sector j. z is the standardized value of variable X_{itj}. Data source: BEL-FIRST database of Bureau van Dyck
DEPPERM	I define the variable X_{itj} as the ratio of total departures of permanent FTE workers to total FTE departures for firm i in year t and in 2-digit NACE2008 sector j. z is the standardized value of variable X_{itj} Data source: BEL-FIRST database of Bureau van Dyck
EBITDATA	Ratio of P/L before taxes (Items #66/70 or #70/66) – Income from current assets (Item #751) – Income from financial fixed assets (Item #752/9) + debt charges (Item #650) + Other financial charges (Item #652/9) + Depreciations and amounts written off fixed assets (Item #630) + Amounts written off stocks and trade debtors (Item #631/4) + Extraordinary depreciation and amounts written off fixed assets (Item #660) – Adjustments to depreciations and amounts written off fixed assets (Item #760) to total assets (Item #20/58). Data source: BEL-FIRST database of Bureau van Dyck.
ENTHIGH	I define the variable X_{itj} as the ratio of total hires of highly educated FTE workers to total FTE hires for firm i in year t and in 2-digit NACE2008 sector j. z is the standardized value of variable X_{itj}. Data source: BEL-FIRST database of Bureau van Dyck.
ENTPERM	I define the variable X_{itj} as the ratio of total hires of permanent FTE workers to total FTE hires for firm i in year t and in 2-digit NACE2008 sector j. z is the standardized value of variable X_{itj}. Data source: BEL-FIRST database of Bureau van Dyck.
FIXEDASSETSTA	Ratio of fixed assets (Item #22/27) to total assets (Item #20/58). Data source: BEL-FIRST database of Bureau van Dyck.
INTA	The ratio intangible assets (Item to book value of assets (INTA) (Item #20/58). Data source: BEL-FIRST database of Bureau van Dyck.
Interest tax refund dummy	Dummy variable equals to one for firms who receive an interest subsidy from the Belgian government (Item #9126) and zero otherwise. Data source: BEL-FIRST database of Bureau van Dyck.
Lnage	Natural logarithm of firm age. Data source: BEL-FIRST database of Bureau van Dyck.
lnassets	Natural logarithm of book value total assets (Item #20/58). Data source: BEL-FIRST database of Bureau van Dyck.
Lnassets2	Square of the natural logarithm of total assets (Item #20/58). Data source: BEL-FIRST database of Bureau van Dyck.
Modified Altman Z-score	Modified Altman Z-score: $= 3.107 \times \frac{\text{EBIT}}{\text{Total assets}} + 0.998 \times \frac{\text{Sales}}{\text{Total assets}} + 0.847 \times \frac{\text{Retained earnings}}{\text{Total assets}} + 0.717 \times \frac{\text{Working capital}}{\text{Total assets}} + 0.420 \times \frac{\text{book value of equity}}{\text{Total liabilities}}$ With - EBIT: Ratio of P/L before taxes (Items #66/70 or #70/66) – Income from current assets (Item #751) – Income from financial fixed assets (Item #752/9) + debt charges (Item #650) + Other financial charges (Item #652/9) - Total assets (Item #20/58) - Sales (Item #70/74) - Retained earnings (Item #693/793) - Book value of equity (Item #10/15) - Working capital: current assets (Item #29/58) – current liabilities (Item #42/48) - Book value of equity (Item #10/15) - Total liabilities: sum of short-term debt (Item #42/48) + long-term debt (Item #17/49) Data source: BEL-FIRST database of Bureau van Dyck.

Net added value growth rate	Annual growth rate added value. Added value: the difference between operating income (Item #70/74) and operating charges (Item #60/64). Data source: BEL-FIRST database of Bureau van Dyck.
Net leverage	Ratio of the difference between total debt (Item #17/49) (short-term debt (Item #42/48) + long-term debt (Item #17)) and cash holdings (Item #54/58) to total assets (Item #20/58). Data source: BEL-FIRST database of Bureau van Dyck.
NOL_DUM	Dummy variable equals to one for firms with net operating profit carryforward (Item # 693/793) and zero otherwise. Data source: BEL-FIRST database of Bureau van Dyck.
Regulated firm dummy	I use a dummy variable equals to one for firms in regulated sectors (i.e. NACE2008 2-digit sectors 10-12, 21,37, 41-43, 49-51 and 53) and zero otherwise. Data source: BEL-FIRST database of Bureau van Dyck.
ROA	Ratio of P/L after taxes (Item #70/67) + debt charges (Item #650) + depreciation on emission costs of loans and redemption premiums (Item #653)- Interest subsidies (Item #9126) + tax (Item #9134) to total assets (Item #20/58). Data source: BEL-FIRST database of Bureau van Dyck.

Appendix B

This Appendix presents the cross-sectional distribution of the employment relationship variables by sector and covers the 2002 to 2007 period. The sector breakdown is based on two-digit NACE2008 codes. All variables are defined in Appendix A.

Type of Sector	2-Digit NACE2008 code	ENTHIGH			DEPHIGH		
		Firm-year obs.	]-∞;0[	]0;+∞[	Firm-year obs.	]-∞;0[	]0;+∞[
Crop and animal production, hunting and related service activities	1	76	68,42%	31,58%	109	69,72%	30,28%
Other mining and quarrying	8	117	64,96%	35,04%	164	71,34%	28,66%
Manufacture of food products	10	1021	64,54%	35,46%	1147	67,39%	32,61%
Manufacture of beverages	11	129	59,69%	40,31%	164	60,37%	39,63%
Manufacture of tobacco products	12	42	50,00%	50,00%	42	57,14%	42,86%
Manufacture of textiles	13	379	63,32%	36,68%	465	68,82%	31,18%
Manufacture of wearing apparel	14	46	58,70%	41,30%	92	64,13%	35,87%
Manufacture of leather and related products	15	18	50,00%	50,00%	18	61,11%	38,89%
Manufacture of wood and products of wood and cork	16	156	66,03%	33,97%	262	75,19%	24,81%
Manufacture of paper and paper products	17	256	61,33%	38,67%	300	63,00%	37,00%
Printing and reproduction of recorded media	18	379	63,32%	36,68%	567	68,96%	31,04%
Manufacture of coke and refined petroleum products	19	47	42,55%	57,45%	48	52,08%	47,92%
Manufacture of chemicals and chemical products	20	645	56,74%	43,26%	719	57,16%	42,84%
Manufacture of basic pharmaceutical products and pharmaceutical preparations	21	175	52,00%	48,00%	182	53,30%	46,70%
Manufacture of rubber and plastic products	22	440	60,68%	39,32%	541	65,43%	34,57%
Manufacture of other non-metallic mineral products	23	598	65,89%	34,11%	796	71,48%	28,52%
Manufacture of basic metals	24	350	62,29%	37,71%	374	61,76%	38,24%
Manufacture of fabricated metal products, except machinery and equipment	25	869	66,05%	33,95%	1223	72,28%	27,72%
Manufacture of computer, electronic and optical products	26	218	40,83%	59,17%	275	52,73%	47,27%
Manufacture of electrical equipment	27	210	61,43%	38,57%	275	64,36%	35,64%
Manufacture of machinery and equipment	28	594	61,78%	38,22%	726	67,08%	32,92%
Manufacture of motor vehicles, trailers and semi-trailers	29	201	63,68%	36,32%	225	64,89%	35,11%
Manufacture of other transport equipment	30	53	54,72%	45,28%	59	55,93%	44,07%
Manufacture of furniture	31	280	64,64%	35,36%	436	73,17%	26,83%
Other manufacturing	32	108	54,63%	45,37%	145	61,38%	38,62%
Repair and installation of machinery and equipment	33	23	56,52%	43,48%	47	74,47%	25,53%
Electricity, gas, steam and air condition supply	35	36	33,33%	66,67%	35	51,43%	48,57%
Sewerage	37	24	62,50%	37,50%	29	68,97%	31,03%
Waste collection, treatment and disposal activities, materials recovery	38	143	65,03%	34,97%	163	66,87%	33,13%
Construction of buildings	41	956	70,50%	29,50%	1207	75,14%	24,86%
Civil engineering	42	415	67,95%	32,05%	591	74,11%	25,89%
Specialized construction activities	43	865	70,98%	29,02%	1347	79,06%	20,94%
Wholesale and retail trade and repair of motor vehicles and motorcycles	45	1305	65,67%	34,33%	1811	72,67%	27,33%
Wholesale, except of motor vehicles and motorcycles	46	4426	61,84%	38,16%	5587	68,37%	31,63%
Retail trade, except of motor vehicles and motorcycles	47	743	71,20%	28,80%	1154	77,82%	22,18%
Land transport and transport via pipelines	49	814	73,83%	26,17%	1172	81,14%	18,86%
Water transport	50	39	58,97%	41,03%	42	57,14%	42,86%
Air transport	51	30	46,67%	53,33%	34	52,94%	47,06%
Warehousing and support activities for transportation	52	828	58,45%	41,55%	977	63,77%	36,23%
Accommodation	55	130	59,23%	40,77%	257	71,21%	28,79%
Food and beverage services activities	56	67	71,64%	28,36%	114	76,32%	23,68%
Publishing activities	58	203	44,83%	55,17%	249	47,79%	52,21%
Motion picture, video and television program production, sound recording, etc;	59	85	47,06%	52,94%	101	51,49%	48,51%
Programming and broadcasting activities	60	34	50,00%	50,00%	36	47,22%	52,78%
Telecommunication	61	65	36,92%	63,08%	66	37,88%	62,12%
Computer programming, consultancy and related activities	62	291	38,14%	61,86%	357	44,82%	55,18%
Information service activities	63	93	38,71%	61,29%	95	44,21%	55,79%
Activities and head offices; management consultancy activities	70	506	41,30%	58,70%	541	44,92%	55,08%

Type of Sector	2-Digit NACE2008 code	ENTPERM			DEPPERM		
		Firm-year obs.	]-∞;0[	]0;+∞[	Firm-year obs.	]-∞;0[	]0;+∞[
Crop and animal production, hunting and related service activities	1	76	55,26%	44,74%	109	52,29%	47,71%
Other mining and quarrying	8	117	43,59%	56,41%	164	45,73%	54,27%
Manufacture of food products	10	1021	58,57%	41,43%	1147	41,06%	58,94%
Manufacture of beverages	11	129	51,94%	48,06%	164	48,17%	51,83%
Manufacture of tobacco products	12	42	47,62%	52,38%	42	47,62%	52,38%
Manufacture of textiles	13	379	64,12%	35,88%	465	33,55%	66,45%
Manufacture of wearing apparel	14	46	60,87%	39,13%	92	54,35%	45,65%
Manufacture of leather and related products	15	18	50,00%	50,00%	18	50,00%	50,00%
Manufacture of wood and products of wood and cork	16	156	60,26%	39,74%	262	47,71%	52,29%
Manufacture of paper and paper products	17	256	63,67%	36,33%	300	39,33%	60,67%
Printing and reproduction of recorded media	18	379	59,10%	40,90%	567	48,32%	51,68%
Manufacture of coke and refined petroleum products	19	47	63,83%	36,17%	48	39,58%	60,42%
Manufacture of chemicals and chemical products	20	645	55,19%	44,81%	719	41,72%	58,28%
Manufacture of basic pharmaceutical products and pharmaceutical preparations	21	175	49,14%	50,86%	182	45,60%	54,40%
Manufacture of rubber and plastic products	22	440	61,82%	38,18%	541	38,45%	61,55%
Manufacture of other non-metallic mineral products	23	598	62,71%	37,29%	796	40,83%	59,17%
Manufacture of basic metals	24	350	51,14%	48,86%	374	42,51%	57,49%
Manufacture of fabricated metal products, except machinery and equipment	25	869	62,83%	37,17%	1223	43,74%	56,26%
Manufacture of computer, electronic and optical products	26	218	63,30%	36,70%	275	40,00%	60,00%
Manufacture of electrical equipment	27	210	59,05%	40,95%	275	40,36%	59,64%
Manufacture of machinery and equipment	28	594	60,77%	39,23%	726	38,71%	61,29%
Manufacture of motor vehicles, trailers and semi-trailers	29	201	55,72%	44,28%	225	39,56%	60,44%
Manufacture of other transport equipment	30	53	43,40%	56,60%	59	44,07%	55,93%
Manufacture of furniture	31	280	68,93%	31,07%	436	40,60%	59,40%
Other manufacturing	32	108	56,48%	43,52%	145	42,76%	57,24%
Repair and installation of machinery and equipment	33	22	50,00%	50,00%	47	57,45%	42,55%
Electricity, gas, steam and air condition supply	35	36	52,78%	47,22%	35	54,29%	45,71%
Sewerage	37	24	45,83%	54,17%	29	48,28%	51,72%
Waste collection, treatment and disposal activities, materials recovery	38	143	67,13%	32,87%	163	32,52%	67,48%
Construction of buildings	41	956	64,44%	35,56%	12	50,00%	50,00%
Civil engineering	42	415	69,88%	30,12%	1207	33,47%	66,53%
Specialized construction activities	43	865	64,05%	35,95%	591	36,21%	63,79%
Wholesale and retail trade and repair of motor vehicles and motorcycles	45	1305	59,31%	40,69%	1347	43,73%	56,27%
Wholesale, except of motor vehicles and motorcycles	46	4426	63,74%	36,26%	1811	44,01%	55,99%
Retail trade, except of motor vehicles and motorcycles	47	743	53,03%	46,97%	5587	40,36%	59,64%
Land transport and transport via pipelines	49	814	71,01%	28,99%	1154	56,59%	43,41%
Water transport	50	38	55,26%	44,74%	1172	41,38%	58,62%
Air transport	51	30	56,67%	43,33%	42	40,48%	59,52%
Warehousing and support activities for transportation	52	828	63,77%	36,23%	34	35,29%	64,71%
Accommodation	55	130	48,46%	51,54%	977	36,85%	63,15%
Food and beverage services activities	56	67	52,24%	47,76%	257	57,20%	42,80%
Publishing activities	58	203	55,17%	44,83%	114	55,26%	44,74%
Motion picture, video and television program production, sound recording, etc;	59	85	52,94%	47,06%	249	46,18%	53,82%
Programming and broadcasting activities	60	34	55,88%	44,12%	101	52,48%	47,52%
Telecommunication	61	65	67,69%	32,31%	36	38,89%	61,11%
Computer programming, consultancy and related activities	62	291	64,60%	35,40%	66	30,30%	69,70%
Information service activities	63	93	64,52%	35,48%	357	30,81%	69,19%
Activities and head offices; management consultancy activities	70	506	67,19%	32,81%	95	37,89%	62,11%

Table I
Descriptive Statistics

The table reports descriptive statistics (Panels A, B and C) between debt maturity measures, net leverage and all other variables over the period 2002 and 2007. Each variable is measured at the end of each fiscal year (December). All variables are defined in Appendix A. The variables are trimmed at the 1st and 99th percentile.

	Nobs	Mean	Std. Dev.	Min.	25%	50%	75%	Max.
Panel A: Debt variables								
Short-term Debt	26,292	0.8113	0.2112	0.0059	0.6998	0.8884	0.9848	1.0000
Debt5	26,157	0.9265	0.1357	0.0308	0.9200	0.9865	0.9986	1.0000
Net leverage	25,984	0.5527	0.2798	-0.9321	0.3836	0.5955	0.7468	2.9761
Panel B: Key variables								
ENTHIGH	19,532	0.0000	0.9969	-9.1924	-0.6925	-0.3902	0.5189	9.1924
DEPHIGH	25.380	0.0000	0.9942	-2.7725	-0.6082	-0.4169	0.3043	7.7651
ENTPERM	19,529	0.0000	0.9926	-2.2350	-0.7513	-0.4540	0.6405	4.7229
DEPPERM	25,406	0.0000	0.9941	-3.2622	-1.0017	0.3642	0.8864	2.0136
Net added value growth rate	21,436	0.0577	2.1068	-15.8462	-0.4388	0.0156	0.4810	15.8846
Capex	21,814	0.0049	0.0683	-1.4313	-0.0192	-0.0025	0.0151	0.7204
RD	26,292	0.0013	0.0136	0.0000	0.0000	0.0000	0.0000	0.6894
Panel C: Firm control variables								
Asset maturity	25,600	2.0799	2.4474	0.1779	0.7311	1.3043	2.5264	37.2746
Modified Altman z-score	19,001	2.5406	1.4803	-0.2654	1.4259	2.3734	3.3794	9.0750
ROA	26,114	0.0670	0.0947	-0.7216	0.0177	0.0508	0.1064	0.4600
Lnassets (in thousand Euros)	26,292	9.2169	1.2604	7.6014	8.3121	8.8921	9.7672	17.4385
Lnages	26,292	3.0989	0.6865	0.0000	2.7081	3.1355	3.5553	4.9767
EBITTA	26.195	0.1259	0.1097	-0.6167	0.0589	0.1087	0.1791	0.6380
FIXEDASSETSTA	26,275	0.3027	0.2235	0.0000	0.1259	0.2535	0.4313	0.9952
Interest Tax Refund Dummy	26,292	0.0330	0.1787	0.0000	0.0000	0.0000	0.0000	1.0000
Surplus of cash	25,299	0.0727	0.0952	0.0000	0.0138	0.0408	0.0910	0.9775
Salesgrowth	21,461	0.0912	0.2631	-0.5200	-0.0219	0.0555	0.1472	3.0376
Capital Tax Refund Dummy	26,292	0.2479	0.4318	0.0000	0.0000	0.0000	0.0000	1.0000
Nol_dum	19,348	0.7358	0.4409	0.0000	0.0000	1.0000	1.0000	1.0000
Regulated Firm Dummy	26,292	0.2316	0.2316	0.4219	0.0000	0.0000	0.0000	1.0000

Table II
Correlation between key variables

This table reports the Pearson correlation coefficients and the Spearman's rank correlation coefficients of the key variables over the sample period 2002 to 2007. Each variable is measured at the end of each fiscal year (December). The Pearson correlation coefficients are presented left from the diagonal where the correlation between the same variables are 1. The Spearman's rank correlation coefficients are presented right from the diagonal where the relation between the same key variables is 1. All variables are defined in Appendix A. The variables are trimmed at the 1st and 99th percentile. I use ***, **, and * to denote significance at the 1 % level, 5 % level, and 10 % level, respectively.

	ENTHIGH	DEPHIGH	ENTPERM	DEPPERM	RD	Capex	Net leverage	Debtshort	Debt15	Net added value growth
ENTHIGH	**1.0000**	0.7046***	-0.0397***	0.0576***	0.0425***	-0.0016	0.0361***	0.0427***	-0.0213***	-0.0069
DEPHIGH	0.6979***	**1.0000**	-0.0066	0.0596***	0.0369***	0.0094	0.0408***	0.0355***	-0.0252***	-0.0072
ENTPERM	-0.1245***	-0.0927***	**1.0000**	-0.7886***	0.0289***	0.0118	0.0080	-0.0056	-0.0050	-0.0042
DEPPERM	0.1285***	0.3139***	-0.7588***	**1.0000**	-0.0437***	-0.0140*	-0.0107	0.0101	0.0128	0.0114
RD	0.0379***	0.0349***	0.0079***	0.0165***	**1.0000**	0.0028	0.0610***	-0.0834***	-0.0791***	-0.0254***
Capex	-0.0339***	-0.0154**	0.0012	-0.0049	-0.0026	**1.0000**	0.0157*	0.0110	-0.0109	0.0433***
Net leverage	0.0286***	0.0498***	-0.0035	0.0511***	0.0133**	0.0136**	**1.0000**	-0.2123***	-0.1105***	-0.0448***
Debtshort	0.0230***	0.0571***	-0.0168**	0.1145***	-0.0246***	-0.0516***	-0.2344***	**1.0000**	0.6607***	-0.0017
Debt15	-0.0268***	0.0059	-0.0020	0.0638***	-0.0254***	-0.0404***	-0.1468***	0.6685***	**1.0000**	-0.0071
Net added value growth	-0.0027	0.0010	-0.0037	0.0088	-0.0098	0.0048	-0.0230***	0.0125*	0.0079	**1.0000**

Figure I: Correlation of Debt Maturity Measures and Employment Contract

Figure I contains information on the relationship between debt maturity measures (DEBTSHORT and DEBT5) and employment contract of a worker (ENTPERM and DEPPERM) for all sample firms per NACE2008 2-digit sectors in my sample over the period 2002 and 2007. The height of the bars in each graph shows the pairwise correlation between debt maturity measures and employment contract (ENTPERM and DEPPERM). All variables are defined in Appendix A. The bars in each graph are sorted from low to high. The NACE2008 2-digit sector labels are mentioned on the X-axis. The pairwise correlation that are significantly different from zero have a lighter shade ($p \leq 0.05$).

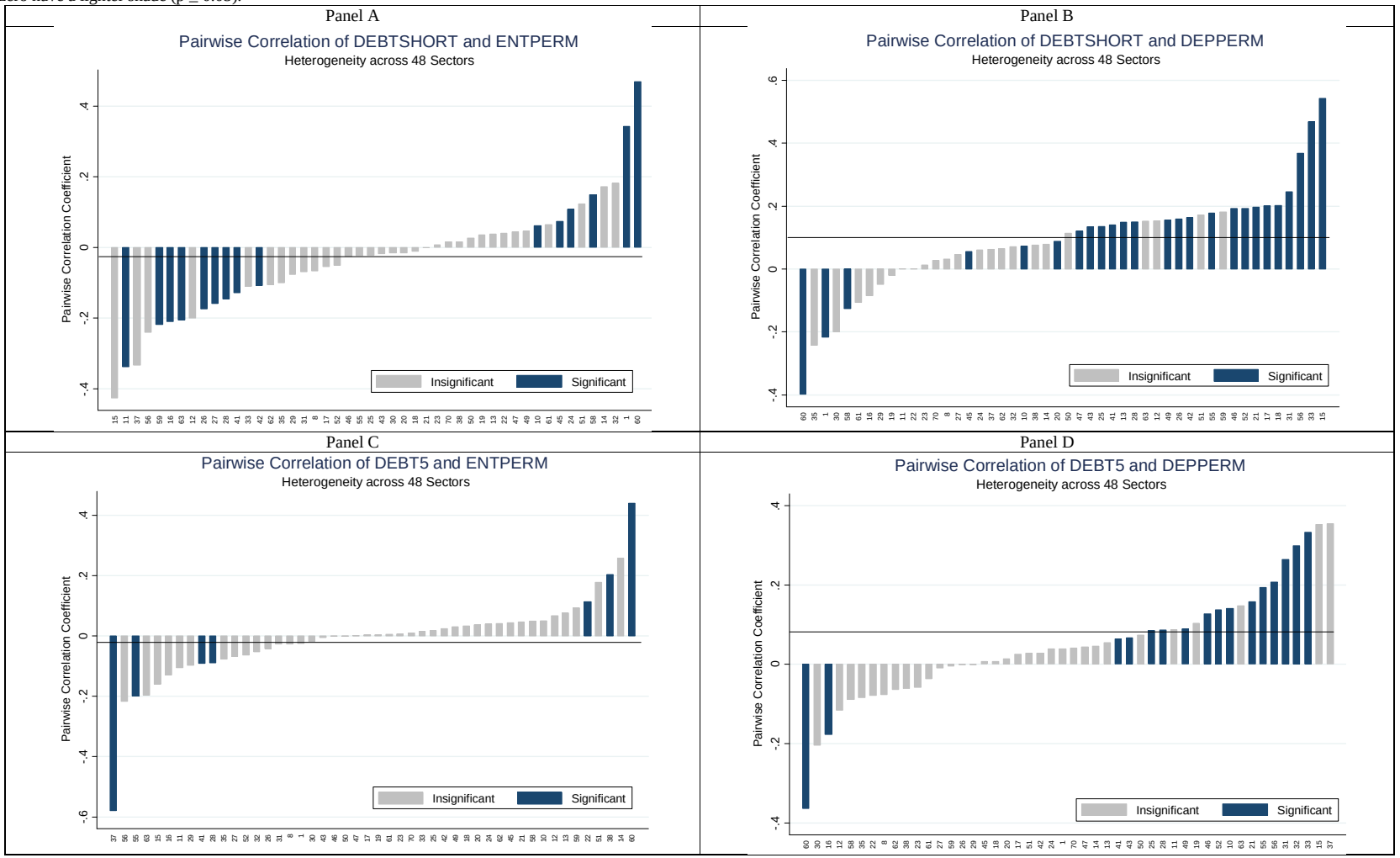
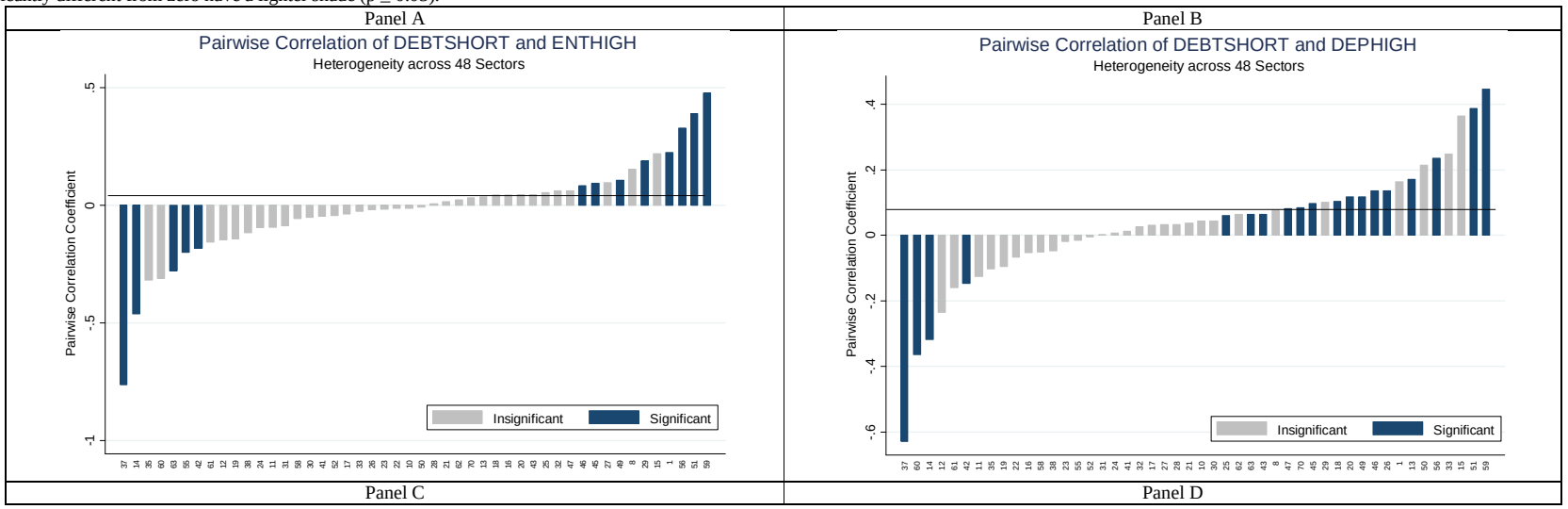


Figure II: Correlation of Debt Maturity Measures and educational level of worker

Figure I contains information on the relationship between debt maturity measures (DEBTSHORT and DEBT5) and highest educational level of a worker (ENTHIGH and DEPHIGH) for all sample firms per NACE2008 2-digit sectors in my sample over the period 2002 and 2007. The height of the bars in each graph shows the pairwise correlation between debt maturity measures and employment relationship variables (ENTHIGH and DEPHIGH). All variables are defined in Appendix A. The bars in each graph are sorted from low to high. The NACE2008 2-digit sector labels are mentioned on the X-axis. The pairwise correlation that are significantly different from zero have a lighter shade ($p \leq 0.05$).



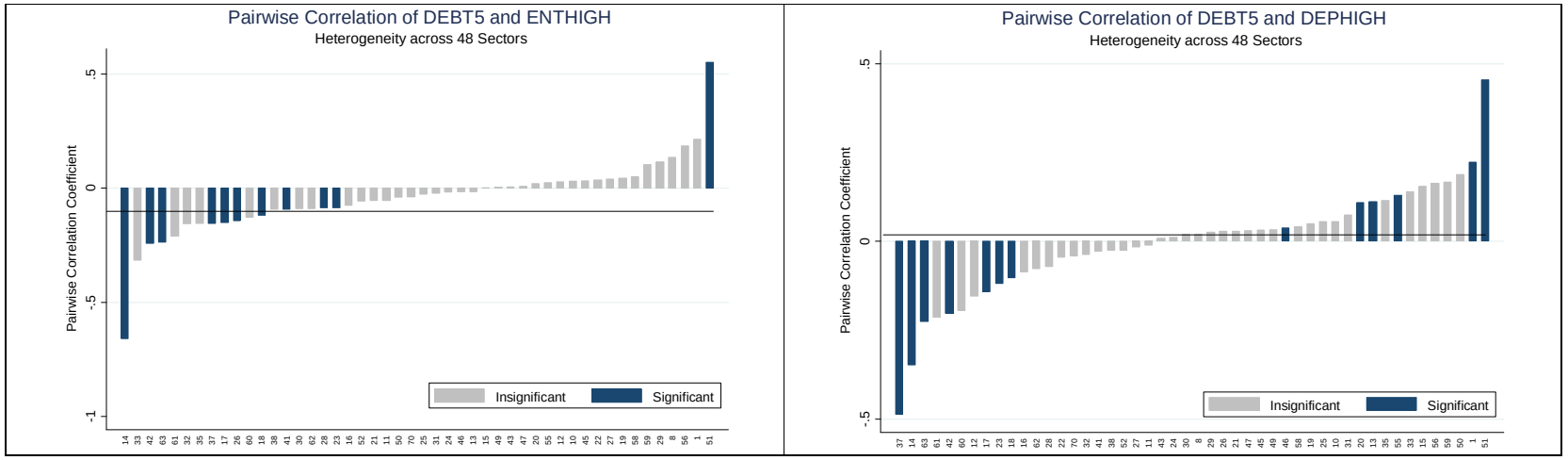

Pairwise Correlation of DEBT5 and ENTHIGH
Heterogeneity across 48 Sectors
Pairwise Correlation Coefficient
-1
-.5
0
.5
Insignificant
Significant
14 33 42 63 61 32 35 37 17 26 60 18 38 41 30 62 28 23 16 52 21 11 50 70 25 31 24 46 13 15 49 43 47 20 55 12 10 45 22 27 19 58 59 29 8 56 1 51
Pairwise Correlation of DEBT5 and DEPHIGH
Heterogeneity across 48 Sectors
Pairwise Correlation Coefficient
-.5
0
.5
Insignificant
Significant
37 14 63 61 42 60 12 17 23 18 16 62 28 22 70 32 41 38 52 27 11 43 24 30 8 29 26 21 47 45 49 46 58 19 25 10 31 20 13 35 55 33 15 56 59 50 1 51

Table III
Relation between Firm Investment Policy and Human Capital

The dependent variables are research and development expenditures scaled by book value of total assets (R&D) and net capital expenditures scales by book value of total assets (Capex). All the models are estimated by using Tobit. The sample covers the 2002 to 2007 period. The regression models include year dummy and 2-digit NACE2008 sectorial dummy variables that are not reported in the table. All variables are defined in Appendix A. Standard errors are robust for heteroskedasticity. t-statistics are reported in parentheses below the parameter estimates. I use ***, **, and * to denote significance at the 1 % level, 5 % level, and 10 % level, respectively. The variables are trimmed at the 1st and 99th percentile. At the bottom of this table, I conduct four different Wald coefficient tests. The null hypothesis for the first test is: H0: ENTHIGH = DEPHIGH. The null hypothesis for the second test is H0: ENTHIGH=0; DEPHIGH=0; and ENTHIGH x DEPHIGH= 0. The null hypothesis for the third Wald coefficient test is ENTPERM = DEPPERM. The null hypothesis for the final Wald coefficient test is H0: ENTPERM=0; DEPPERM=0; and ENTPERM x DEPPERM= 0.

	R&D				**Capex**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
ENTHIGH	0.0035***	0.0040***			-0.0071***	-0.0072***		
	(2.85)	(3.17)			(-5.75)	(-5.68)		
DEPHIGH	-0.0019*	-0.0008			-0.0004	-0.0005		
	(-1.70)	(-0.71)			(-0.32)	(-0.38)		
ENTPERM			0.0004	0.0008			-0.0031**	-0.0030**
			(0.29)	(0.61)			(-2.30)	(-2.21)
DEPPERM			-0.0031	-0.0018			-0.0075***	-0.0073***
			(-1.53)	(-0.86)			(-4.02)	(-3.74)
Growth options	-0.0005	-0.0005	-0.0005	-0.0005	-0.0004	-0.0004	-0.0004	-0.0004
	(-1.28)	(-1.24)	(-1.24)	(-1.24)	(-0.96)	(-0.97)	(-0.90)	(-0.90)
Net leverage	0.0169***	0.0167***	0.0173***	0.0174***	0.0033	0.0033	0.0024	0.0024
	(4.27)	(4.24)	(4.32)	(4.34)	(0.86)	(0.86)	(0.62)	(0.62)
Lnassets	0.0089***	0.0087***	0.0090***	0.0092***	0.0024***	0.0024***	0.0010	0.0011*
	(7.39)	(7.34)	(7.52)	(7.52)	(3.67)	(3.69)	(1.61)	(1.66)
ln age	0.0002	0.0001	0.0001	0.0000	-0.0021	-0.0021	-0.0019	-0.0020
	(0.15)	(0.09)	(0.08)	(0.03)	(-1.61)	(-1.61)	(-1.51)	(-1.51)
ROA	-0.0567***	-0.0565***	-0.0571***	-0.0571***	0.0036	0.0036	0.0024	0.0024
	(-5.41)	(-5.41)	(-5.43)	(-5.43)	(0.40)	(0.40)	(0.27)	(0.27)
Surplus Cash	-0.0102	-0.0104	-0.0092	-0.0088	-0.0451***	-0.0451***	-0.0465***	-0.0465***
	(-0.85)	(-0.87)	(-0.77)	(-0.74)	(-4.47)	(-4.46)	(-4.59)	(-4.59)
Sales growth	0.0026	0.0027	0.0026	0.0025	0.0423***	0.0423***	0.0425***	0.0425***
	(0.77)	(0.80)	(0.75)	(0.72)	(10.75)	(10.74)	(10.86)	(10.86)
ENTHIGH * DEPHIGH		-0.0012*				0.0002		
		(-1.77)				(0.27)		
ENTPERM * DEPPERM				-0.0024*				-0.0006
				(-1.88)				(-0.48)
Constant	-0.2022***	-0.1996***	-0.2035***	-0.2068***	-0.0525***	-0.0529***	-0.0348***	-0.0356***
	(-8.76)	(-8.75)	(-8.82)	(-8.79)	(-5.61)	(-5.59)	(-3.79)	(-3.82)
Sigma (σ)	0.0599***	0.0598***	0.0599***	0.0599***	0.0858***	0.0858***	0.0860***	0.0860***
	(11.10)	(11.11)	(11.11)	(11.11)	(46.59)	(46.59)	(46.50)	(46.49)
Year FE	X	X	X	X	X	X	X	X
Industry FE	X	X	X	X	X	X	X	X
Firm-year observations	14,972	13,613	14,971	14,971	14,908	14,908	14,907	14,907
Left-censored observations	13,613	1,359	13,612	13,612	8,425	8,425	8,423	8,423
Uncensored observations	1,359	1,359	1,359	1,359	6,483	6,483	6,484	6,484
Log-pseudolikelihood	-527.80	-525.94	-527.97	-526.28	1968.41	1968.45	1942.64	1942.76
F-value model	2.70***	2.67***	2.77***	2.72***	8.07***	7.93***	7.31***	7.19***
Wald Test: H0: ENTHIGH = DEPHIGH	6.26**	5.51**			9.42***	9.26***		
Wald test against H0: ENTHIGH; DEPHIGH; ENTHIGH ¨x DEPHIGH= 0		3.59**				23.81***		
Wald Test: H0: ENTPERM = DEPPERM			3.58**	2.41*			8.84***	7.54***
Wald test against H0: ENTPERM; DEPPERM; ENTPERM ¨x DEPPERM= 0				3.41**				5.95***

Table IV:

Relation between Debt Maturity, Net Leverage and Human Capital: joint determination of Debt Maturity and Net Leverage

This table shows the results for the two-equation system allowing the joint determination of debt maturity and net leverage based on a non-linear GMM, FIML and 3SLS. The sample covers the 2002 to 2007 period. I include the following firm control variables for the debt maturity equation: lnage, lnassets, EBITDATA, asset maturity, lnsize2 and regulated firm dummy. I include the following firm control variables for the net leverage equation: lnage, lnassets, EBITDATA, FIXEDASSETSTA, ROA, NOL_DUM, interest dummy, capital dummy, and regulated firm dummy. The equations include year dummy and 2-digit NACE2008 sectorial dummy variables that are not reported in the table. For brevity only the parameter estimations of the key variables and interaction variables of the debt maturity equation are reported in this Table. All variables are defined in Appendix A. Heteroskedasticity and autocorrelation consistent t-statistics are reported in parentheses below the parameter estimates. Due to the unbalanced nature of the data, I try to avoid multicollinearity by dropping some year and industry dummies. I use ***, **, and * to denote significance at the 1 % level, 5 % level, and 10 % level, respectively. The variables are trimmed at the 1st and 99th percentile.

	Panel Employment Contract						**Panel Highest Educational Degree**					
	Non-linear GMM	**Non-linear GMM**	**Non-linear FIML**	**Non-linear FIML**	**Non-linear 3SLS**	**Non-linear 3SLS**	**Non-linear GMM**	**Non-linear GMM**	**Non-linear FIML**	**Non-linear FIML**	**Non-linear 3SLS**	**Non-linear 3SLS**
	Debtshort	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Key variables												
Net leverage	0.1339**	0.1948***	11.2287***	1.4049***	0.4564***	0.3459***	0.0184	0.0730***	5.7947***	0.6724***	0.1778***	0.1598***
	(2.08)	(4.51)	(4.07)	(10.07)	(7.32)	(8.25)	(0.44)	(2.65)	(5.84)	(13.14)	(4.49)	(5.96)
ENTPERM	0.0857***	0.0820***	3.0278***	0.3922***	0.2033***	0.1369***						
	(4.76)	(6.71)	(4.13)	(10.61)	(11.91)	(12.04)						
DEPPERM	0.1574***	0.1505***	5.6749***	0.7337***	0.3871***	0.2589***						
	(4.72)	(6.70)	(4.14)	(10.63)	(12.32)	(12.35)						
ENTHIGH							-0.0055	-0.0048	-0.4103***	-0.0609***	-0.0334***	-0.0309***
							(-0.80)	(-0.85)	(-5.79)	(-12.49)	(-6.24)	(-8.20)
DEPHIGH							0.0102	0.0004	0.6037***	0.0813***	0.0557***	0.0365***
							(1.48)	(0.09)	(5.95)	(13.07)	(9.39)	(8.78)
Net added value growth	0.0001	-0.0002	-0.0059	-0.0006	-0.0001	-0.0001	0.0001	-0.00001	-0.0026	-0.0002	-0.00004	-0.0001
	(0.16)	(-0.30)	(-0.67)	(-0.47)	(-0.15)	(-0.18)	(0.10)	(-0.02)	(-0.48)	(-0.19)	(-0.05)	(-0.09)
Interaction variables												
ENTPERM * net leverage	-0.1488***	-0.1472***	-5.3094***	-0.6844***	-0.3521***	-0.2372***						
	(-4.79)	(-6.95)	(-4.13)	(-10.57)	(-11.92)	(-12.05)						
DEPPERM * net leverage	-0.2805***	-0.2776***	-10.0036***	-1.2918***	-0.6754***	-0.4553***						
	(-4.80)	(-7.03)	(-4.13)	(-10.62)	(-12.28)	(-12.41)						
ENTHIGH * net leverage							0.0167	0.0080	0.7576***	0.1025***	0.0615***	0.0470***
							(1.33)	(0.75)	(5.96)	(14.01)	(7.23)	(7.77)
DEPHIGH * net leverage							-0.0118	-0.0037	-1.0528***	-0.1388***	-0.0856***	-0.0591***
							(-0.96)	(-0.39)	(-5.98)	(-14.12)	(-8.92)	(-8.74)
Constant	0.3787***	0.7369***	-6.1919***	0.0206	0.4492***	0.7126***	0.4836***	0.8594***	-2.9032***	0.4881***	0.6150***	0.8242***
	(5.33)	(6.87)	(-3.31)	(0.14)	(6.44)	(15.98)	(6.90)	(20.21)	(-3.42)	(5.78)	(9.27)	(17.38)
Firm-year observations	10,944	10,922	10,944	10,922	10,944	10,922	10,945	10,923	10,945	10,923	10,945	10,923
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table V: Extension 1

Differences in the effect of the Relation between Debt Maturity, Net Leverage and Human Capital: joint determination of Debt Maturity and Net Leverage with financial distressed firms vs. financially sound firms

This table presents the results for the two-equation system allowing the joint determination of debt maturity and net leverage based on a non-linear GMM, FIML and 3SLS separately for financially distressed firms and non-financially distressed firms. The sample covers the 2002 to 2007 period. I include the following firm control variables for the debt maturity equation: lnage, lnassets, EBITDATA, asset maturity, lnsize2 and regulated firm dummy. I include the following firm control variables for the net leverage equation: lnage, lnassets, EBITDATA, FIXEDASSETSTA, ROA, NOL_DUM, interest dummy, capital dummy and regulated firm dummy. The equations include year dummy and 2-digit NACE2008 sectorial dummy variables that are not reported in the table. For brevity only the parameter estimations of the key variables and interaction variables of the debt maturity equation are reported in this Table. All variables are defined in Appendix A. Heteroskedasticity and autocorrelation consistent t-statistics are reported in parentheses below the parameter estimates. Due to the unbalanced nature of the data, I try to avoid multicollinearity by dropping some year and industry dummies. I use ***, **, and * to denote significance at the 1 % level, 5 % level, and 10 % level, respectively. The variables are trimmed at the 1st and 99th percentile.

	Financially Distressed Firms											
	Panel Employment Contract						**Panel Highest Educational Degree**					
	Non-linear GMM	**Non-linear GMM**	**Non-linear FIML**	**Non-linear FIML**	**Non-linear 3SLS**	**Non-linear 3SLS**	**Non-linear GMM**	**Non-linear GMM**	**Non-linear FIML**	**Non-linear FIML**	**Non-linear 3SLS**	**Non-linear 3SLS**
	Debtshort	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Key variables												
Net leverage	0.5405 (0.83)	0.1153*** (3.28)	14.8324* (1.85)	0.4802*** (8.80)	0.7213 (1.25)	0.2211*** (6.12)	-0.1073*** (-2.77)	0.0371* (1.70)	4.7220*** (4.21)	0.2223*** (8.26)	-0.0279 (-0.79)	0.0768*** (3.36)
ENTPERM	0.2021 (1.13)	0.0475*** (4.95)	3.9025* (1.87)	0.1355*** (9.43)	0.2639* (1.65)	0.0977*** (10.17)						
DEPPERM	0.3317 (1.12)	0.0830*** (4.76)	7.1736* (1.87)	0.2476*** (9.44)	0.4435* (1.68)	0.1794*** (10.33)						
ENTHIGH							-0.0032 (-0.59)	-0.0080** (-2.44)	-0.3785*** (-4.34)	-0.0301*** (-9.49)	-0.0271*** (-5.69)	-0.0260*** (-8.17)
DEPHIGH							0.0062 (1.08)	0.0067** (2.06)	0.4920*** (4.40)	0.0336*** (8.96)	0.03938*** (7.59)	0.0274*** (8.05)
Net added value growth	0.0127 (0.94)	-0.00004 (-0.09)	-0.0208 (-1.11)	-0.0005 (-0.63)	0.0145 (1.20)	-0.0001 (-0.09)	0.0005 (0.62)	0.0001 (0.23)	-0.0089 (-1.41)	-0.0002 (-0.34)	0.0004 (0.41)	0.00003 (0.06)
Interaction variables												
ENTPERM * net leverage	-0.3695 (-1.11)	-0.0951*** (-5.16)	-7.5197* (-1.87)	-0.2597*** (-9.45)	-0.4882* (-1.65)	-0.1879*** (-10.30)						
DEPPERM * net leverage	-0.6174 (-1.14)	-0.1724*** (-5.13)	-13.8111* (-1.87)	-0.4775*** (-9.52)	-0.8165* (-1.69	-0.3479*** (-10.50)						
ENTHIGH * net leverage							0.0113 (1.09)	0.0129** (1.98)	0.8053*** (4.41)	0.0565*** (10.10)	0.0623*** (7.30)	0.0457*** (8.08)
DEPHIGH * net leverage							-0.0069 (-0.65)	-0.0200*** (-3.12)	-0.9624*** (-4.38)	-0.0670*** (-9.92)	-0.0703*** (-7.58)	-0.0543*** (-8.88)
Constant	3.0848 (1.41)	0.9712*** (25.41)	-4.7171 (-1.47)	0.7445*** (13.03)	3.0960 (1.61)	0.9128*** (24.55)	0.9674*** (14.34)	1.0555*** (26.85)	-0.8440 (-1.24)	0.8834*** (20.72)	0.9251*** (15.69)	0.9947*** (24.92)
Firm-year observations	8,405	8,389	8,405	8,389	8,405	8,389	8,404	8,388	8,404	8,388	8,404	8,388
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

	Financially Sound Firms											
	Panel Employment Contract						Panel Highest Educational Degree					
	Non-linear GMM	Non-linear GMM	Non-linear FIML	Non-linear FIML	Non-linear 3SLS	Non-linear 3SLS	Non-linear GMM	Non-linear GMM	Non-linear FIML	Non-linear FIML	Non-linear 3SLS	Non-linear 3SLS
	Debtshort	Debt5	Debtshort	Debt5	Debtshort	Debt5	Debtshort	Debt5	Debtshort	Debt5	Debtshort	Debt5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Key variables												
Net leverage	1.5930*** (6.90)	0.7408** (2.44)	4.8509*** (6.63)	1.3724*** (7.32)	1.7897*** (7.93)	0.9844*** (7.18)	0.8643*** (5.77)	0.3520*** (3.39)	3.6742*** (6.58)	1.0437*** (6.95)	1.3062*** (8.91)	0.6376*** (7.00)
ENTPERM	0.5334*** (5.34)	0.2824*** (3.05)	1.5676*** (6.60)	0.4712*** (7.68)	0.5937*** (7.28)	0.4311*** (8.83)						
DEPPERM	1.1945*** (3.34)	0.6215* (1.86)	3.1997*** (6.74)	0.9616*** (7.82)	1.2814*** (8.18)	0.8947*** (9.46)						
ENTHIGH							-0.0298 (-0.62)	-0.0058 (-0.20)	-0.2261*** (-4.42)	-0.0655*** (-4.28)	-0.0613*** (-3.13)	-0.0237** (-2.42)
DEPHIGH							-0.0093 (-0.15)	-0.0426 (-0.98)	0.3857*** (5.10)	0.1140*** (5.06)	0.0999*** (4.29)	0.0327** (2.40)
Net added value growth	-0.0034 (-0.72)	-0.0014 (-0.75)	-0.0027 (-0.45)	-0.0009 (-0.39)	-0.0024 (-0.87)	-0.0012 (-0.72)	-0.0030 (-1.21)	-0.0013 (-0.83)	0.0026 (0.44)	0.0006 (0.27)	-0.0001 (-0.03)	0.0001 (0.07)
Interaction variables												
ENTPERM * net leverage	-0.7515*** (-5.27)	-0.3917*** (-3.09)	-2.1867*** (-6.63)	-0.6498*** (-7.71)	-0.8235*** (-7.30)	-0.5934*** (-8.80)						
DEPPERM * net leverage	-1.7076*** (-3.50)	-0.8795* (-1.87)	-4.5164*** (-6.69)	-1.3522*** (-7.79)	-1.8058*** (-8.20)	-1.2539*** (-9.44)						
ENTHIGH * net leverage							0.0184 (0.28)	-0.0050 (-0.12)	0.2598*** (5.10)	0.0683*** (4.91)	0.0578*** (2.67)	0.0157 (1.64)
DEPHIGH * net leverage							0.0398 (0.46)	0.0722 (1.21)	-0.4826*** (-5.44)	-0.1342*** (-5.32)	-0.1076*** (-3.82)	-0.0275* (-1.68)
Constant	-0.1909 (-0.34)	0.3430 (1.16)	-2.6000*** (-3.03)	-0.0308 (-0.12)	-0.3369 (-0.98)	0.2450 (1.24)	-0.5524 (-1.40)	0.0745 (0.35)	-1.7407*** (-2.66)	0.1745 (0.90)	0.0617 (0.34)	0.4371*** (4.68)
Firm-year observations	2,540	2,534	2,540	2,534	2,540	2,534	2,540	2,534	2,540	2,534	2,540	2,534
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table VI: Extension 2
Relation between Debt Maturity, Net Leverage and Human Capital: Joint Determination of Debt Maturity and Net Leverage by sorting firms according to their CEOs investment behavior

This table examines the robustness of the empirical relation between debt maturity, net leverage and human capital by allowing the joint determination of debt maturity and capital structure and by sorting firms according to their CEOs investment behavior based on a non-linear GMM and 3SLS. The sample covers the 2002 to 2007 period. I include the following firm control variables for the debt maturity equation: lnage, lnassets, EBITDATA, asset maturity, lnsize2 and regulated firm dummy. I include the following firm control variables for the net leverage equation: lnage, lnassets, EBITDATA, FIXEDASSETSTA, ROA, NOL_DUM, interest dummy, capital dummy and regulated firm dummy. The equations include year dummy and 2-digit NACE2008 sectorial dummy variables that are not reported in the table. For brevity only the parameter estimations of the key variables and interaction variables of the debt maturity equation are reported in this Table. All variables are defined in Appendix A. Heteroskedasticity and autocorrelation consistent t-statistics are reported in parentheses below the parameter estimates. Due to the unbalanced nature of the data, I try to avoid multicollinearity by dropping some year and industry dummies. I use ***, **, and * to denote significance at the 1 % level, 5 % level, and 10 % level, respectively. The variables are trimmed at the 1st and 99th percentile.

	Panel Employment contract							
	Positive Forward-looking investment behavior (>0)				**Negative Forward-looking investment behavior (≤0)**			
	Non-linear GMM	**Non-linear GMM**	**Non-linear 3SLS**	**Non-linear 3SLS**	**Non-linear GMM**	**Non-linear GMM**	**Non-linear 3SLS**	**Non-linear 3SLS**
	Debtshort	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Key variables								
Net leverage	0.0085	0.1436	0.2555**	0.2314***	0.1432*	0.2041***	0.5056***	0.3973***
	(0.08)	(1.55)	(2.45)	(3.48)	(1.73)	(3.66)	(6.73)	(7.68)
ENTPERM	0.0844**	0.0985***	0.1997***	0.1688***	0.0792***	0.0784***	0.2084***	0.1432***
	(2.33)	(3.38)	(5.46)	(7.25)	(3.58)	(5.20)	(10.47)	(10.53)
DEPPERM	0.1274**	0.1631***	0.3486***	0.2914***	0.1556***	0.1509***	0.4029***	0.2750***
	(2.00)	(2.87)	(5.52)	(7.26)	(3.76)	(5.36)	(10.91)	(10.87)
Net added value growth rate	-0.0003	-0.0006	0.0003	-0.0006	-0.0003	-0.0001	-0.0003	0.0002
	(-0.20)	(-0.54)	(0.18)	(-0.56)	(-0.33)	(-0.14)	(-0.26)	(0.25)
Interaction variables								
ENTPERM * net leverage	-0.1409**	-0.1548***	-0.3150***	-0.2589***	-0.1416***	-0.1458***	-0.3668***	-0.2535***
	(-2.51)	(-3.28)	(-5.53)	(-7.16)	(-3.61)	(-5.44)	(-10.43)	(-10.55)
DEPPERM * net leverage	-0.2134**	-0.2620***	-0.5565***	-0.4580***	-0.2816***	-0.2838***	-0.7133***	-0.4932***
	(-2.07)	(-2.78)	(-5.44)	(-7.06)	(-3.82)	(-5.64)	(-10.87)	(-10.97)
Constant	0.1658	-0.2300	0.8153***	1.0281***	0.4046***	0.7323***	0.3916***	0.6591***
	(0.62)	(-0.34)	(5.72)	(9.01)	(5.15)	(15.13)	(5.05)	(12.98)
Firm-year observations	1,535	1,531	1,535	1,531	9,409	9,391	9,409	9,391
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES

	Panel Employment contract							
	Positive Backward-looking investment behavior (>0)				**Negative Backward-looking investment behavior (≤0)**			
	Non-linear GMM	**Non-linear GMM**	**Non-linear 3SLS**	**Non-linear 3SLS**	**Non-linear GMM**	**Non-linear GMM**	**Non-linear 3SLS**	**Non-linear 3SLS**
	Debtshort	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**	**Debtshort**	**Debt5**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Key variables								
Net leverage	0.7932**	0.2044**	0.6217***	0.2608***	0.0920	0.1902***	0.4492***	0.3815***
	(3.13)	(2.21)	(4.74)	(3.28)	(1.14)	(3.53)	(6.17)	(7.60)
ENTPERM	0.2721***	0.0992***	0.2499**	0.1518***	0.0754***	0.0770***	0.2004***	0.1399***
	(3.23)	(3.39)	(6.44)	(6.53)	(3.41)	(5.13)	(10.19)	(10.37)
DEPPERM	0.7388***	0.2335***	0.4666***	0.2735***	0.1402***	0.1464***	0.3830***	0.2665***
	(4.21)	(3.88)	(6.88)	(6.73)	(3.40)	(5.27)	(10.51)	(10.65)
Net added value growth rate	0.0136***	0.0047***	0.0057***	0.0024*	-0.0003	-0.0007	-0.0016	-0.0012
	(3.49)	(2.87)	(2.72)	(1.85)	(-0.24)	(-0.98)	(-1.36)	(-1.48)
Interaction variables								
ENTPERM * net leverage	-0.3939***	-0.1419***	-0.4012***	-0.2378***	-0.1335***	-0.1422***	-0.3536***	-0.2470***
	(-3.03)	(-3.12)	(-6.41)	(-6.34)	(-3.42)	(-5.38)	(-10.23)	(-10.43)
DEPPERM * net leverage	-1.0828***	-0.3466***	-0.7611***	-0.4436***	-0.2556***	-0.2752***	-0.6788***	-0.4762***
	(-4.09)	(-3.74)	(-6.79)	(-6.59)	(-3.48)	(-5.56)	(-10.51)	(-10.74)
Constant	-7.5853***	-1.0369	0.2167	0.7328***	0.4070***	0.7481***	0.4698***	0.6925***
	(-3.55)	(-1.48)	(0.93)	(5.25)	(5.37)	(16.75)	(6.45)	(14.38)
Firm-year observations	1,479	1,477	1,479	1,477	9,465	9,445	9,465	9,445
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES

	Panel Highest Educational Degree							
	Positive Forward-looking investment behavior (>0)				Negative Forward-looking investment behavior (≤0)			
	Non-linear GMM	Non-linear GMM	Non-linear 3SLS	Non-linear 3SLS	Non-linear GMM	Non-linear GMM	Non-linear 3SLS	Non-linear 3SLS
	Debtshort	Debt5	Debtshort	Debt5	Debtshort	Debt5	Debtshort	Debt5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Key variables								
Net leverage	-0.0428	0.0059	0.0777	0.0085	0.0086	0.0631*	0.2049***	0.1801***
	(-0.64)	(0.16)	(1.13)	(0.19)	(0.17)	(1.88)	(4.40)	(5.67)
ENTHIGH	-0.0211	-0.0074	-0.0469***	-0.0075	-0.0018	-0.0088	-0.0319***	-0.0310***
	(-1.37)	(-0.81)	(-3.83)	(-0.71)	(-0.24)	(-1.45)	(-5.39)	(-7.65)
DEPHIGH	0.0218	-0.0182*	0.0491***	-0.0234**	0.0050	0.0031	0.0573***	0.0391***
	(1.34)	(-1.83)	(3.75)	(-2.10)	(0.64)	(0.54)	(8.54)	(8.52)
Net added value growth rate	-0.00001	-0.0009	0.0006	-0.0005	-0.0002	0.0001	-0.0002	0.0002
	(-0.01)	(-0.94)	(0.32)	(-0.44)	(-0.23)	(0.16)	(-0.22)	(0.29)
Interaction variables								
ENTPERM * net leverage	0.0406	0.0005	0.0793***	0.0007	0.0083	0.0162	0.0587***	0.0480***
	(1.62)	(0.03)	(4.47)	(0.04)	(0.60)	(1.40)	(6.13)	(7.32)
DEPPERM * net leverage	-0.0437*	0.0229	-0.0828***	0.0318*	0.0007	-0.0089	-0.0867***	-0.0634***
	(-1.75)	(1.41)	(-4.37)	(1.90)	(0.05)	(-0.85)	(-7.87)	(-8.39)
Constant	0.3284	0.9992***	0.8153***	1.1361***	0.5215***	0.8632***	0.5832***	0.7974***
	(1.24)	(6.76)	(5.12)	(7.48)	(7.04)	(21.00)	(8.09)	(16.19)
Firm-year observations	1,535	1,531	1,535	1,531	9,410	9,392	9,410	9,392
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES

	Panel Highest Educational Degree							
	Positive Backward-looking investment behavior (>0)				Negative Backward-looking investment behavior (≤0)			
	Non-linear GMM	Non-linear GMM	Non-linear 3SLS	Non-linear 3SLS	Non-linear GMM	Non-linear GMM	Non-linear 3SLS	Non-linear 3SLS
	Debtshort	Debt5	Debtshort	Debt5	Debtshort	Debt5	Debtshort	Debt5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Key variables								
Net leverage	0.2997**	0.0331	0.3681***	0.0633	-0.0200	0.0668**	0.1729***	0.1842***
	(2.37)	(0.67)	(4.23)	(1.17)	(-0.39)	(2.01)	(3.72)	(5.81)
ENTHIGH	-0.0419	-0.0090	-0.1008***	-0.0438***	0.0021	-0.0048	-0.0287***	-0.0280***
	(-1.18)	(-0.66)	(-4.89)	(-3.07)	(0.31)	(-0.83)	(-5.14)	(-7.20)
DEPHIGH	0.0242	-0.0100	0.1082***	0.0288**	0.0035	0.0009	0.0539***	0.0368***
	(0.72)	(-0.76)	(5.44)	(2.10)	(0.46)	(0.16)	(8.36)	(8.21)
Net added value growth rate	0.0131***	0.0030*	0.0056***	0.0021	-0.0007	-0.0007	-0.0015	-0.0010
	(3.97)	(1.83)	(2.77)	(1.63)	(-0.64)	(-1.06)	(-1.25)	(-1.29)
Interaction variables								
ENTPERM * net leverage	0.0704	0.0076	0.1583***	0.0613***	0.0038	0.0094	0.0559***	0.0438***
	(1.34)	(0.33)	(5.18)	(2.87)	(0.29)	(0.85)	(6.17)	(6.89)
DEPPERM * net leverage	-0.0566	0.0105	-0.1637***	-0.0417**	0.0013	-0.0053	-0.0834***	-0.0611***
	(-1.14)	(0.50)	(-5.45)	(-2.00)	(0.10)	(-0.52)	(-7.88)	(-8.21)
Constant	-5.7555***	0.0428	0.4523*	0.9974***	0.5164***	0.8626***	0.6316***	0.8099***
	(-3.42)	(0.07)	(1.94)	(5.91)	(7.13)	(22.08)	(9.13)	(16.68)
Firm-year observations	1,479	1,477	1,479	1,477	9,466	9,466	9,466	9,466
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES

Table VII: Extension 3

Relation between Debt Maturity, Net Leverage and Human Capital: Joint Determination of Debt Maturity, Net Leverage and Investment Policies

This table examines the robustness of the empirical relation between debt maturity, net leverage and human capital by allowing the joint determination of debt maturity, capital structure and investment policies based on a non-linear GMM, FIML and 3SLS. The sample covers the 2002 to 2007 period. I include the following firm control variables for the debt maturity equation: lnage, lnassets, EBITDATA, asset maturity, lnsize2 and regulated firm dummy. I include the following firm control variables for the net leverage equation: lnage, lnassets, EBITDATA, FIXEDASSETSTA, ROA, NOL_DUM, interest dummy, capital dummy and regulated firm dummy. The following firm control variables are included in the investment policy equations (Capex and R&D): lnage, lnassets, ROA, sales growth and surplus cash. The dependent variables RD and Capex are multiplied by 10^2 in all the four models, respectively, to improve display of the estimates. The equations include year dummy and 2-digit NACE2008 sectorial dummy variables that are not reported in the table. For brevity only the parameter estimations of the key variables and interaction variables of the debt maturity equation are reported in this Table. All variables are defined in Appendix A. Heteroskedasticity and autocorrelation consistent t-statistics are reported in parentheses below the parameter estimates. Due to the unbalanced nature of the data, I try to avoid multicollinearity by dropping some year and industry dummies. I use ***, **, and * to denote significance at the 1 % level, 5 % level, and 10 % level, respectively. The variables are trimmed at the 1st and 99th percentile.

	Panel Employment Contract											
	Model 1											
	Non-linear GMM				**3SLS**				**FIML**			
Independent variables	**Net leverage**	**Debtshort**	**Capex**	**RD**	**Net leverage**	**Debtshort**	**Capex**	**RD**	**Net leverage**	**Debtshort**	**Capex**	**RD**
Key variables												
Net leverage		1.9670** (2.32)	-1.2830*** (-3.71)	-0.1543*** (-2.76)		0.6517 (1.07)	-2.4178*** (-7.40)	-0.1930*** (-3.57)		4.2761* (1.90)	-1.9769*** (-5.80)	-0.0603 (-0.71)
Debt short	-5.3612*** (-6.64)		-8.7721*** (-12.26)	-0.5623*** (-5.23)	-4.8849*** (-7.84)		-11.4003*** (-18.00)	-0.8298*** (-8.10)	-6.733 (-0.65)		-9.3742*** (-12.81)	-0.3773** (-1.98)
ENTPERM	-0.5359*** (-2.67)	0.7575** (2.02)	-1.1672*** (-3.17)	-0.0152 (-0.21)	-0.6175*** (-4.12)	0.2387 (0.88)	-1.2217*** (-3.38)	-0.1017 (-1.56)	-4.2587 (-0.62)	1.7072* (1.70)	-1.2195*** (-3.21)	-0.1379* (-1.81)
DEPPERM	-0.6527*** (-3.00)	0.9778** (2.05)	-1.4737*** (-3.78)	0.0116 (0.14)	-0.7640*** (-4.62)	0.3108 (0.90)	-1.3730*** (-3.58)	-0.1279* (-1.81)	-5.1497 (-0.62)	2.1594* (1.70)	-1.3824*** (-3.40)	-0.1783** (-2.32)
Net added value growth	-0.0080 (-0.48)	-0.0027 (-0.71)	-0.0146 (-0.47)	0.0100* (1.73)	-0.0333*** (-2.72)	-0.0061** (-2.18)	-0.0512* (-1.70)	-0.0047 (-0.89)	-0.2607 (-0.62)	-0.0120* (-1.66)	-0.0552* (-1.86)	-0.0097* (-1.85)
Capex	-0.2197*** (-9.14)	-0.0625*** (-14.07			-0.1943*** (-10.29)	-0.0484*** (-11.48)			-0.7258 (-0.63)	-0.0486*** (-2.81)		
RD	-3.0251*** (-7.73)	-0.6632*** (-10.67)			-2.8026*** (-9.52)	-0.4710*** (-10.46)			-23.0265 (-0.62)	-1.0306** (-2.40)		
Interaction variables												
ENTPERM * net leverage		-1.6602** (-2.48)				-0.6547 (-1.37)				-3.4246* (-1.94)		
DEPPERM * net leverage		-2.0868** (-2.45)				-0.8266 (-1.36)				-4.3140* (-1.94)		
Constant	5.6406*** (7.25)	-0.1585 (-0.34)	8.3737*** (7.57)	1.3030*** (4.27)	4.7919*** (7.87)	0.4191 (1.25)	10.9098*** (10.12)	1.1573*** (4.23)	5.5466 (0.54)	-1.3580 (-1.12)	8.8187*** (7.17)	0.3903 (1.22)
Firm-year observations	10,906				10,906				10,906			
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

	Panel Employment Contract											
	Model 2											
	Non-linear GMM				3SLS				FIML			
Independent variables	**Net leverage**	**Debt5**	**Capex**	**RD**	**Net leverage**	**Debt5**	**Capex**	**RD**	**Net leverage**	**Debt5**	**Capex**	**RD**
Key variables												
Net leverage		1.2874*** (3.93)	-2.9732*** (-7.09)	-0.1144* (-1.90)		1.2982*** (5.02)	-3.8179*** (-10.22)	-0.1263** (-2.50)		4.5135** (2.23)	-2.7736*** (-7.28)	0.0814 (0.98)
Debt5	-9.6431*** (-6.44)		-35.5427*** (-15.30)	-0.2889 (-0.77)	-9.7442*** (-7.24)		-43.3736*** (-21.21)	-0.7279** (-2.27)	-16.8929** (-2.01)		-36.5708*** (-17.12)	0.3290 (0.61)
ENTPERM	-0.2703* (-1.74)	0.5351*** (3.72)	-1.0323** (-2.53)	0.0864 (1.00)	-0.4744*** (-3.48)	0.5651*** (4.95)	-1.0158** (-2.37)	-0.1136* (-1.73)	-0.8236 (-1.00)	2.0237** (2.18)	-0.9849** (-2.12)	-0.1370* (-1.79)
DEPPERM	-0.3672* (-2.21)	0.6925*** (3.80)	-1.4245*** (-3.30)	0.0941 (0.99)	-0.6108*** (-4.06)	0.7178*** (4.98)	-1.3016*** (-2.87)	-0.1587** (-2.19)	-1.3027 (-1.25)	2.5599** (2.18)	-1.2704** (-2.55)	-0.1828** (-2.40)
Net added value growth	0.0021 (0.18)	-0.0005 (-0.50)	0.0048 (0.14)	0.0082 (1.25)	-0.0210* (-1.90)	-0.0008 (-0.89)	-0.0382 (-1.07)	-0.0054 (-1.05)	-0.0727 (-1.10)	0.0049 (0.89)	-0.0465 (-1.29)	-0.0104** (-1.97)
Capex	-0.1827*** (-7.70)	-0.0183*** (-10.34)			-0.1826*** (-8.94)	-0.0148*** (-8.91)			0.0167 (0.08)	-0.0085 (-0.98)		
RD	-1.9226*** (-5.57)	-0.1100*** (-6.43)			-1.9513*** (-8.27)	-0.0601*** (-3.76)			-7.6762 (-1.60)	0.4316 (1.13)		
Interaction variables												
ENTPERM * net leverage		-1.6602** (-2.48)				-1.0543*** (-5.22)				-3.5364** (-2.25)		
DEPPERM * net leverage		-2.0868** (-2.45)				-1.3394*** (-5.25)				-4.4561** (-2.25)		
Constant	5.6406*** (7.25)	-0.1585 (-0.34)	8.3737*** (7.57)	1.3030*** (4.27)	9.5219*** (7.74)	0.2320* (1.67)	42.0989*** (18.79)	0.6609 (1.61)	15.9703** (2.07)	-1.4287 (-1.37)	35.0505*** (14.66)	-0.4345 (-0.82)
Firm-year observations	10,906				10,906				10,906			
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

	Panel Higest Educational Degree											
	Model 3											
	Non-linear GMM				3SLS				FIML			
Independent variables	**Net leverage**	**Debtshort**	**Capex**	**RD**	**Net leverage**	**Debtshort**	**Capex**	**RD**	**Net leverage**	**Debtshort**	**Capex**	**RD**
Key variables												
Net leverage		-0.1186*** (-3.70)	-3.3448*** (9.09)	-0.1569* (4.11)		-0.1826*** (-7.81)	-4.8685*** (-10.37)	-0.1306** (-2.06)		0.0227 (0.06)	-3.6723*** (-6.69)	0.1015 (1.08)
Debt short	-4.5013*** (-5.06)		-10.8060*** (-7.05)	-0.7102*** (-1.95)	-4.441*** (-7.12)		-12.0889*** (-19.55)	-1.0521*** (-14.15)	-151.9620 (-0.07)		-9.3349*** (-12.35)	-0.4543** (-2.38)
ENTHIGH	0.0796 (0.46)	0.05341 (1.20)	-0.5778* (-14.89)	-0.0142 (-8.63)	0.2138* (1.84)	0.0766** (2.21)	-0.5310 (-1.59)	0.1093 (1.93)	22.1505 (-0.07)	0.1545 (0.06)	-0.5689 (-1.41)	0.1212** (2.33)
DEPHIGH	0.1924 (1.05)	0.0745 (1.56)	0.4116 (-1.93)	0.0826 (-0.20)	0.1384 (1.12)	0.0277 (0.84)	0.0995 (0.28)	0.0614 (1.05)	7.4452 (-0.06)	0.0556 (0.71)	0.0107 (0.03)	0.0351 (0.66)
Net added value growth	-0.0067 (-0.47)	-0.0014 (-0.43)	-0.0247 (1.31)	0.0082 (1.10)	-0.0292*** (-2.67)	-0.0058** (-2.25)	-0.0483 (-1.60)	-0.0073 (-1.46)	-2.6532 (1.24)	-0.0155* (-1.77)	-0.0536* (-1.81)	-0.0104** (-2.00)
Capex	-0.1776*** (-8.04)	-0.0529*** (-11.86)			-0.1543*** (-9.89)	-0.0394*** (-13.01)			-7.3543 (0.13)	-0.0439** (-2.17)		
RD	-2.5813*** (-7.26)	-0.568*** (-12.60)			-2.353*** (-9.54)	-0.4320*** (-13.57)			-216.6710 (1.17)	-1.2575** (-2.34)		
Interaction variables												
ENTHIGH * net leverage		-0.0774 (-1.62)				-0.0734* (-1.95)				-0.0466 (-0.22)		
DEPHIGH * net leverage		-0.0443 (-1.25)				0.0008 (0.03)				-0.0193 (-0.22)		
Constant	4.0625*** (5.38)	0.6491*** (6.40)	10.1809*** (-0.77)	1.2364*** (1.55)	3.7321*** (7.02)	0.7796*** (8.90)	11.8248*** (11.20)	0.9568*** (4.39)	73.0536 (0.07)	0.4914 (-0.06)	8.4424*** (6.78)	0.1315 (0.41)
Firm-year observations	10,930				10,930				10,930			
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

	Panel Higest Educational Degree											
	Model 4											
	Non-linear GMM				3SLS				FIML			
Independent variables	**Net leverage**	**Debt5**	**Capex**	**RD**	**Net leverage**	**Debt5**	**Capex**	**RD**	**Net leverage**	**Debt5**	**Capex**	**RD**
Key variables												
Net leverage		-0.0068 (-0.54)	-4.2961*** (-8.82)	-0.1645*** (-2.61)		-0.0534*** (-4.74)	-6.6136*** (-13.19)	-0.0889 (-1.21)		0.2862* (1.89)	-3.4561*** (-6.12)	0.2610*** (3.50)
Debt5	-6.6965*** (-7.87)		-39.3737*** (-19.84)	-0.6817*** (-3.05)	-8.1567*** (-8.65)		-47.735*** (-26.20)	-1.3195*** (-4.23)	-48.1438 (-0.85)		-29.7554*** (-16.36)	0.91039** (2.01)
ENTHIGH	-0.1683** (-2.09)	0.0224 (1.60)	-1.2222*** (-3.41)	-0.0375 (-0.57)	-0.0356 (-0.51)	0.0226** (1.96)	-1.1074*** (-2.84)	0.1029* (1.67)	4.2887 (0.63)	0.0599 (0.78)	-1.1045*** (-2.71)	0.2605*** (5.64)
DEPHIGH	0.0933 (1.08)	0.0370*** (3.00)	0.3696 (0.98)	0.0632 (0.87)	0.0721 (0.96)	0.0128 (1.21)	0.1966 (0.47)	0.0226 (0.38)	2.4973 (0.64)	0.0191 (0.45	-0.0504 (-0.12)	0.1198*** (2.80)
Net added value growth	0.0061 (0.89)	0.0001 (0.07)	0.0106 (0.29)	0.0079 (1.50)	-0.0135** (-2.03)	-0.0009 (-1.21)	-0.0293 (-0.83)	-0.0069 (-1.34)	-0.2929 (-0.67)	0.0091 (1.12)	-0.0382 (-1.15)	-0.0147*** (-2.89)
Capex	-0.1103*** (-8.83)	-0.0166*** (-10.76)			-0.1299*** (-9.67)	-0.0157*** (-12.15)			-0.1285 (-0.25)	0.0003 (0.02)		
RD	-1.0039*** (-6.30)	-0.0986*** (-8.36)			-1.2528*** (-7.58)	-0.0606*** (-5.75)			-22.2954 (-0.68	0.6303 (1.36)		
Interaction variables												
ENTHIGH * net leverage		-0.0770*** (-4.18)				-0.0640*** (-4.29)				-0.3921** (-2.21)		
DEPHIGH * net leverage		-0.0445*** (-3.33)				-0.0115 (-1.03)				-0.1699** (-2.20)		
Constant	6.3585*** (8.46)	0.8293*** (23.83)	37.2686*** (16.65)	0.6158 (1.87)	7.6150*** (9.39)	0.8600*** (24.10)	46.6080*** (22.85)	0.7188 (1.50)	43.3111 (0.88)	0.6902*** (5.29)	29.5418*** (14.69)	-1.2103*** (-2.73)
Firm-year observations	10,906				10,906				10,906			
Firm-control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	No	No	No	No
Industry fixed effects (2-digit Nace 2008 codes)	YES	YES	YES	YES	YES	YES	YES	YES	No	No	No	No