Financially Constrained Firms: The Impact Of Managerial Optimism And Corporate Investment – The Case Of Greece

Dimitrios Maditinos, Alexandra Tsinani, Željko Šević and Jelena Stankevičienė

Financially Constrained Firms: The Impact Of Managerial Optimism And Corporate Investment – The Case Of Greece

Dimitrios Maditinos[1], Alexandra Tsinani[1], Željko Šević[2] and Jelena Stankevičienė[2]

[1]International Hellenic University, Department of Management Science and Technology, Kavala, Greece
[2] Vilnius Gediminas Technical University, Department of Finance Engineering, Faculty of Business Management, Lithuania

ABSTRACT

Purpose
The purpose of this paper is to examine the impact of managerial optimism on corporate investment regarding the financially constrained firms for the case of Greece. Taking as a fact that managers principally are optimistic and often overconfident an effort is made to highlight the effect of this psychological bias on managerial investment decision – making.

Design/methodology/approach
The research methodology is based on the approach that the investment-cash flow sensitivity of firms with optimistic managers is more pronounced in financially constrained (equity dependent) firms. Data is gathered from the stock market as well as from balance sheets and cash flow statements for all firms of the sample. Focus is placed on every firm's annual report in order to gather all necessary data for the methodology. Additionally, stock prices are classified on an everyday basis for all firms for the years from 2007 to 2012. Fixed effects panel regression of capital expenditures on several control variables is used among all stocks of the sample's 184 non-financial firms with the highest financial constraints in order to examine the impact of the behaviour of optimistic managers to firm financial constraints.

Findings
Constrained firms exhibit a lower profitability, a lower pay-out ratio, a lower excess value, and are more likely to be financially distressed. The empirical findings clearly show that the investment-cash flow sensitivity of firms with optimistic managers is more pronounced in financially constrained (equity dependent) firms. The difference between unconstrained firms and constrained firms is that on one hand unconstrained firms, with more cash flow, tend to use debt in order to increase both their investment as well as their dividend payment, and on the other hand, constrained firms have to choose whether to apportion their cash flow to investment or dividend payments.

Research limitations/implications
In this study the regressions that were run were for the whole of the 6-year period of 2007 to 2012. However, testing each year individually could provide researchers with the ability to compare different results, to find out whether there was anything special statistically for each specific year and maybe test the period after the year 2010 when the Greek crisis had started to come up on the horizon. Additionally, supplementary research is proposed regarding the impact of managerial optimism in order to examine its impact on the whole range of decisions that managers have to make

Originality/value
As part of the literature which links psychological and economic variables to test behavioural finance models, this paper is the first to investigate managerial optimism and its impact on corporate investment in Greece. The importance of this study lie in finding how managerial decision making works within a firm, how biased a manager is when he has to make extremely important decisions regarding the firm's future performance and success, and how managerial optimism affects corporate investment decision-making especially in financially constrained firms.

1. Introduction

Financing investment may not be a problem for large, well-known firms. However, many analysts believe that smaller, less well-known firms sometimes find it difficult to finance worthy projects. Banks and outside investors may be reluctant to fund unfamiliar firms, forcing these

firms to finance their investment internally. As such, these firms can be defined as financially constrained. The implications for the economy are serious if firms are financially constrained. By forcing firms to finance their own investment, financial constraints can make the economy less stable.

A growing body of evidence suggests many firms in the economy are financially constrained. Financial constraints affect both the stability and growth of the economy. By making investment spending more volatile, financial constraints make the economy more volatile. And by slowing investment spending on plant and machinery, financial constraints slow the economy's long-term growth. By making firms dependent on the availability of internal funds, financial constraints make business investment spending more volatile. Aggregate investment spending in the economy fluctuates much more than any other major component of national spending. One of the most significant predictions of the literature is that the link between managerial optimism and corporate investment is most usually encountered in financially constrained or equity-dependent firms.

Heaton (2002) find that optimistic managers prefer internal financing to external financing because they believe market investors underestimate the value of their firm and thus hesitate to raise funds from the financial markets. Several empirical studies, such as Lin et al. (2008) and Hackbarth (2008), confirm this theoretical prediction by Heaton (2002) and show that managerial optimism can explain pecking order preferences in financial decisions. Barros and Silveira (2009) further show that firms with optimistic managers will choose a more aggressive financing policy, resulting in firms that have higher leverage ratios, affecting their capital structure.

Managerial behaviour tendencies may not only affect a firm's financing decisions but also impact its investment decisions. Jensen (1986), using the concept of agency cost of free cash flow, predicts that managers may invest in negative NPV projects due to self-interest. This agency cost between managers and shareholders may thus cause overinvestment, resulting in investment distortions. Malmendier and Tate (2005a) is the first study to consider managerial optimism in corporate investment decisions. They measure the timing of CEO's stock option exercise as the proxy for CEO optimism and find that overoptimistic CEOs are significantly more responsible for the firm's cash flow. By hand-collecting data on how the press portrays each CEO as the measure of managerial optimism, Malmendier and Tate (2005b) reconfirm their findings that managerial overoptimism accounts for corporate investment distortions. Using a unique database of German companies to proxy for managerial optimism, Glaser et al. (2008) show that the investment–cash flow sensitivity is higher for firms with optimistic managers, which again supports the findings of Malmendier and Tate (2005a, b).

2. Theoretical Background

Overconfidence and optimism

The notion that specific managers may be overconfident regarding their own abilities to manage, the selection of upper investment projects and the precision of their knowledge are encouraged by psychological studies of judgement. The most significant finding in this area of study is the phenomenon of overconfidence (Tversky and Kahneman, 1986). They simply argue that overconfidence consists of factors such as the illusion of control, insensitivity to predictive accuracy, self-enhancement tendencies and finally misunderstanding of chance processes. All the above mentioned causes of overconfidence apply to the managerial decision making of mergers. Griffin and Brenner (2004) argue that all concepts that characterise overconfidence are linked.

Weinstein (1980) provides evidence that individuals are especially overconfident regarding projects to which they are highly committed. Malmendier and Tate (2005a, 2005b) argue about the potential of control and commitment concerning managers' internal investment decisions. Optimistic managers tend to invest more. However, the possible case of over-investment due to overconfidence and managerial optimism may be a source of long –run underperformance (Glaser and Weber, 2007). In his seminal paper regarding optimism Roll's (1986) *hubris hypothesis* suggests that managers share an overly optimistic opinion of their competence to create value. Hubris usually is developed after a person has lived through a period of success. Hubris refers to the extravagant confidence of people who strongly believe that their opinion is always the right one. Consequently, hubris feelings can lead to harmful and unfavourable behaviour. Especially for a manager who is seriously affected by hubris, may become a burden for their firms. As a result, these managers often trigger their own downfall. Therefore, hubris as a psychological characteristic may induce disastrous outcomes for the manager and his firm.

Generally, the *hubris hypothesis* (Roll, 1986) serves as an alternative explanation of corporate mergers and acquisitions. Hubris when referring to individual decision makers regarding bidding firms, can give an explanation on why bids are made even when there exists a positive valuation error. Therefore, bidding firms which are affected by hubris tend to pay too much for their mergers and acquisitions investment targets. According to Roll (1986) psychologists offer explanations on the fact that individuals do not always make rational decisions, under risk and uncertainty. In a series of studies (Oskamp, 1965; Tversky and Kahneman, 1981; Kahneman, Slovic and Tversky, 1982) it is observed that economists have a reputation of arrogance due to the fact that they constantly ignore the psychologists' evidence that individuals do not always act rationally. However, Roll (1986) suggests that corporate takeovers usually reflect individual decision making.

The psychology and behavioural economic literature underline self-attribution bias as the most common source of overconfidence. According to Malmendier and Tate (2005a) overconfidence is equal to over-optimism. Over-optimist managers overestimate the returns of their investment decisions and regard external funds excessively costly. Optimistic managers are at higher risk because they use to overestimate the future cash flows of their decisions.

Specifically, overconfident managers tend to consider that future outcome of mergers are under their control, especially regarding outcomes of mergers that they are

highly committed (Weinstein, 1980; Weinstein and Klein, 2002). A manager who is deceived regarding his power of control is likely to be extremely optimistic about the future prospects of a merger (Langer, 1975; Langer and Roth, 1975; and March and Shapira, 1987). Weinstein (1980) provides evidence that individuals are especially overconfident regarding projects to which they are highly committed. Malmendier and Tate (2005a; 2005b) argue about the potential of control and commitment concerning managers' internal investment decisions. Optimistic managers tend to invest more. However, the possible case of over-investment due to overconfidence and managerial optimism may be a source of long –run underperformance (Glaser and Weber, 2007). In his seminal paper regarding optimism Roll's (1986) *hubris hypothesis* suggests that managers share an overly optimistic opinion of their competence to create value. Hubris usually is developed after a person has lived through a period of success. Hubris refers to the extravagant confidence of people who strongly believe that their opinion is always the right one. Consequently, hubris feelings can lead to harmful and unfavourable behaviour. Especially for a manager who is seriously affected by hubris, may become a burden for their firms. Therefore, hubris as a psychological characteristic may induce disastrous outcomes for the manager and his firm.

Especially regarding mergers, the bidding firms which are affected by hubris, usually pay large amounts of money for their targets (Hietala, Kaplan and Robinson, 2003). Consistent with Roll (1986) the managers who are overcome with hubris act in a way which they believe as the most proper for the best interests of their shareholders. Moreover, it is also possible that managers also gain from mergers and acquisitions which do not favour their shareholders. Therefore, private benefits tend to decrease when a manager owns a larger share of a firm's equity (Hietala *et al.*, 2003).

Another interesting point in literature is self-attribution bias as reinforcement to individual overconfidence (Langer and Roth, 1975; Miller and Ross, 1975). According to Svenson (1981) this bias is similar to the "better than average effect" which suggests that individuals believe they have above-average abilities to make the correct decisions. Since self-attribution bias amplifies overconfidence, those managers who suffer from this bias are more likely to be highly overconfident regarding their judgement and overestimate or underestimate the positive or respectively negative outcomes of a possible merger. In corporate finance, irrational agents are less likely to learn from bad experience because important corporate decisions regarding capital structure or investment policy in general, are not that frequent like trading decisions are. Russo and Schoemaker (1992; 2002) argue that managers tend to make the mistake of equating experience with learning and knowledge. Hayward (2002) argues that learning is related mostly to the quality and not the quantity of a firm's experience.

According to Doukas and Petmezas (2007) the overconfidence hypothesis states that managers are overconfident and over-invest. They also feel that are superior regarding others and more competent. Specifically, overconfident managers strongly believe that future merger outcomes are mainly under their

control. A Chief Executive Officer (CEO) who suffers from delusion of control is more likely to be heavily optimistic about the future outcome of a merger. Malmendier and Tate (2005a, 2008) also try to demonstrate that overconfidence helps explain merger decisions. Positive CEO beliefs based on overconfidence and risk-seeking decisions emerge as the most well-defined ways to integrate private investment and corporate merger decisions.

Regarding firm investment and optimistic managers, Glaser et al. (2008) underline the fact that managerial optimism gives an explanation for corporate investment even when other variables are controlled for. This is mainly driven by managers' optimism regarding capital expenditures. The effects of managerial optimism on capital expenditures are stronger in small firms as well as for stocks with a low percentage of closely held shares. Still regarding acquisitions there is a difference between the fact that all managers decide together as a group and an individual manager deciding alone. Optimism of all managers significantly increases the probability of an acquisition whereas single manager's optimism alone does not.

Beber and Fabbri (2012) find that specific managerial characteristics as CEO age and education are correlated with speculation in the FX market. This finding is also consistent with Bertrand and Schoar (2003) who showed that managerial style, which is likely to be affected by managerial characteristics and significantly affects corporate financial policy. Additionally, Huang and Kisgen (2013) find that male executives make riskier financial and investment decisions than female executives. According to Kaplan et al. (2012) general CEO ability and execution skills play a significant role in buyout and venture capital transactions. Adam et al. (2014) have also addressed the concern that their optimism measure it is probably correlated with CEO characteristics that also affect risk-taking such as CEO age, tenure, gender, and education. In addition to personal managerial characteristics, executive compensation plans are likely to also affect risk-taking behavior. Older CEOs are not that likely to issue new debt that contain performance-pricing provisions in comparison to younger CEOs.

Finally, Banerjee et al. (2015) examine the fact that the promotion of overconfident executives to CEOs is a prejudiced decision firms make. The reason that firms select optimistic or overconfident CEOs is because overconfidence is indissolubly connected with policies, such as innovation and greater investments more vulnerable to risk. The motive is the belief that they will improve the firm's value, given its current situation. Additionally, consistent with prior literature they propose that overconfident CEOs might be better innovators. Banerjee et al. (2015) find support for their hypothesis that firms that are more likely to appoint optimistic and overconfident CEOs are those that are larger and are associated with lower risk.

Finance Constraint Theories

Managers no longer cope with a strict finance constraint. Even though managers often have to pay for their purchases with cash, they have the capacity to

borrow in case of lower liquidity. Due to the introduction of other assets too, the finance constraint becomes more clear and conclusive. Since money is the only asset that is involved in this model, holding of money is a very complicated procedure and usually mixed up with saving. Therefore, money-holding behaviour cannot be easily separated from money-saving behaviour.

According to Kohn (1981a) there exists a finance constraint on aggregate spending despite the fact that asset markets relieve the finance constraint on the individual. The total money available an individual has may be redistributed in order to be spent between individuals by the process of trading assets. The individual behaviour, therefore, will be consistent with the lack of the necessity to be aware of this aggregate finance constraint. The strange attributes of finance constraint models arise from the difference in the set of constraints in these models as well as the straightforward present-value inter-temporal budget constraint that managers cope with in a model implying complete financial markets.

The first attribute is a wedge which exists between purchase prices and sales prices. According to Wilson (1979) and Kohn (1984) if managers display time preference, or even when the value of money changes, the time wedge between purchase and sale will capture a price wedge too. The existence of this time wedge between purchases and sales is underlying in finance constraint models. In the case that purchases and sales would occur at the same time, finance constraints would vanish. Thus, money's only role in the formal model would be its function as a medium of exchange.

The second attribute of finance constraint models refers to the fact that agents cope with a sequence of constraints only when finance constraints are binding (Kohn, 1988). In this specific case, multiple effects are caused because of the circular flow of payments between agents. Additional attention must be made regarding financial constraint models in order for the circular flow of payments to be consistent with the notion that the spending of one agent that affects the constraints of others must be received by another. This phenomenon may constitute a specific problem for representative agent models (Fried, 1973; Stockman, 1980; Feenstra, 1985). A finance constraint model seriously involves heterogeneity of agents in order for the money outflow to be fit in with the inflow of another agent. Heterogeneity as the main substance of various distribution effects which cannot be observed in a representative agent model, usually ends up offering some very useful and important results (Kohn, 1988; Barsky *et al.*, 1997).

The question of how important finance constraints are for firms was empirically first presented in the seminal work of Fazzari, Hubbard, and Petersen (1987). Empirical models of business investment are based generally on the hypothesis of a "representative firm" which is correlated to prices set in centralised securities markets. Actually, with the assumption that all firms have the same access to capital markets, firms' reply to alterations in the cost of capital or investment motives based on tax, is different only due to changes in investment demand. External funds offer a perfect substitute for internal capital. Thus, a firm's financial

structure is not relevant. Generally, a firm's investment decision making is not dependent on its financial condition, given the fact that capital markets function in a perfect way (Glaser, Lopez-de Silanes, and Sautner, 2013).

An alternative theory, however, is proposed by Fazzari, Hubbard, and Petersen (1988) who base their work on the view that internal and external capital are not perfect substitutes. Based on this point of view, investment may possibly depend on financial factors, like the availability of internal finance, the procedure of issuing new debt or equity, or the function of specific credit markets. Early investment research focused on the significance of financial considerations in business investment (Meyer and Kuh, 1957). Financial effects, actually, have drawn major attention during the early post-war period (Modigliani and Miller, 1958) regarding all areas of economic activity. The vast majority of literature, however, has secluded real firm decision making from pure financial factors.

Modigliani and Miller (1958) were the first to provide the theoretical grounds for that approach, by displaying the fact that financial structure and financial policy are irrelevant regarding investment under certain conditions. They argue that in perfect capital markets the financial structure of a firm will not affect its market value. Therefore, if their assumptions are proven, real firm decision making, with the hypothesis of the maximisation of shareholders' wealth, is not dependent on financial factors like debt leverage, dividend payments, and internal liquidity.

Hall and Jorgenson (1967) develop the neoclassical theory of investment. According to this theory, a firm's inter-temporal optimisation problem could be confronted without the need of financial factors. Firms which were assumed to cope with a cost of capital it were proved to have solved their problems without dependence on the firm's specific financial structure.

The broader and most precise definition of financial constraints, classifies firms as financially constrained when they are forced to cope with a wedge between the internal and external cost of funds (Kaplan and Zingales, 1997). With the use of this definition, however, all firms should be classified as financially constrained. Only a small transaction cost which will occur when raising external funds would be enough to classify a firm as financially constrained. However, this definition provides an important and useful pattern in order to differentiate firms based on the degree they are financially constrained. As the wedge between internal and external cost of funds increases, a firm increases its financial constraints. The classification pattern of Kaplan and Zingales (1997) therefore, is designed to isolate the differences in the degree to which firms are financially constrained. Generally, more constrained and less constrained firms are the firms which present relatively large and small amounts of liquid assets and net worth.

Kaplan and Zingales (1997) are not interested whether the wedge between internal and external cost of funds is caused by hidden information problems or agency problems (Jensen and Meckling, 1976; Myers and Majluf, 1984; Greenwald, Stiglitz, and Weiss, 1984; Hart and Moore, 1995). The purpose of their analysis is, therefore, to understand the effects of capital market imperfections on investment. Thus, they are agnostic on

identifying the source of the capital market imperfections (Blanchard, Lopez-de-Silanes and Shleifer, 1994).

3. Methodology

Research question
Research Question: The investment-cash flow sensitivity of firms with optimistic managers is more pronounced in financially constrained (equity dependent) firms. The following approach is chosen in order to test the second research question. The Kaplan-Zingales-index (Kaplan and Zingales, 1997) is used which was mainly used in past studies too. This index is meant to capture firms with high need for funds. Another index that is used is the Whited-Wu-index (Whited and Wu, 2006) which basically captures firms with high costs of external funds. Finally, we incorporate the Cleary-index (Cleary, 1999) which separates the sample into three categories of firms' dividend payment policies, as well as an index of Glaser et al. (2008) who make an addition to Cleary-index (Cleary, 1999) by adding firm size.

Sample and data
The unique sample of Greek non-financial firms listed in the ASE was tested in order to produce useful results. These results may be extremely important for managers of Greek companies in order to overcome the difficulties they face. The narrow bounds for investment and rising of firms, the general financial crisis of public as well as private sectors, make the role of Greek managers much more difficult. Therefore, the firm sample is multi-faceted. It consists of firms from 11 different industries and sectors in order to incorporate the whole substance of optimism. The process is to exclude financial firms due to the differences in the way they compile their annual reports. Thus, the 184 non-financial sample firms will be the starting point for the research, in order to produce significant results and add to the existing knowledge on this subject.

Data is gathered from the stock market as well as from balance sheets and cash flow statements for all firms of the sample. Focus is placed on every firm's annual report in order to gather all necessary data for the methodology. The next step is to classify stock prices on an everyday basis for all firms for the years from 2007 to 2012. Data is accessed from the ASE and is accumulated for every sample firm. Balance sheet data is necessary in order to formulate the basic variables that will be used in regression analysis. Balance sheet data is gathered from the web pages of all firms and is accumulated on an annual basis.

Basic regressions are run from 2005 to 2012 in order to have an analysis of the effects of managerial optimism on subsequent corporate investment, aiming to see if there is something special about the period of interest in terms of investing conditions. The main data source for stock price data is the ASE. ASE is the primary data source of studies that analyse corporate decisions in Greece.

Directors' dealings data is obtained from Directors Deals – Global Data & Analysis, a specialised global data market company which analyses and monitors all share transactions made by directors in the shares of their own company. Therefore, this work uses all the available data regarding the Greek case for the period of 6 years (2007 to 2012). During this period a total of 18,575 directors' dealings are reported. Due to the fact that this study focuses on the transaction behaviour of individuals, all transactions that were executed by legal entities are excluded. The procedure is to maintain only the transactions that are described as buys or sells and exclude awards, contract buys, transfer ins and outs, transfers, div re, exercise, sale-post exercise, given away and subscribe.

Financial constraints measures
One of the most significant predictions of the literature is that the link between optimism and corporate investment is most usually encountered in financially constrained or equity-dependent firms. The most used index and consequently the most used methodology on financial constraints is of Kaplan and Zingales (1997). Their index is mainly designed for identifying firms with high need for funds However, there are other indices too that have emerged in relative literature such as the Cleary-index (Cleary, 1999) and the Whited-Wu-index (Whited and Wu, 2006). Both indices are supposed to capture firms with high costs of external funds.

This study opts to choose the following approach. As in Glaser *et al.* (2008) the Kaplan-Zingales-index (Kaplan and Zingales, 1997) is used as well as the Whited-Wu-index (Whited and Wu, 2006) in order to capture the differences in their approaches regarding financial constraints; the high need of funds as well as the high costs of external funds respectively. These indices have been constructed for the US stocks only. However, there are several studies in literature which incorporate these indices for firms in Europe. Bris, Koskinen and Nilsson (2006) focus on the identification of financially constrained firms in Germany and the rest of Europe with the use of Kaplan-Zingales-index (Kaplan and Zingales, 1997). These indices are displayed below, as they were presented in Glaser *et al.* (2008):

$$\text{Kaplan-Zingales-index} = -1.001909 * \frac{\text{cash flow}}{\text{total capital}} + 0.2826389 * \text{Tobin's Q} + 3.139193 * \text{Leverage} - 39.3678 * \frac{\text{dividend}}{\text{total capital}} - 1.314759 * \frac{\text{cash}}{\text{total capital}} \quad (1)$$

Kaplan and Zingales (1997) measure investment or capital expenditures using COMPUSTAT item 128. They also measure cash flow as the sum of earnings before extraordinary items and depreciation. They deflate investment and cash flow by capital, measured as net property, plant, and equipment at the beginning of the fiscal year. Finally, they measure Tobin's Q as the market value of assets divided by the book value of assets where the market value of assets equals the book value of assets plus the market value of common equity minus the sum of the book value of common equity and balance sheet deferred taxes.

$$\text{Whited-Wu-index} = -0.091 * \frac{\text{cash flow}}{\text{total assets}} - 0.062 * \text{dummy (positive dividend)} + 0.021 * \frac{\text{long term debt}}{\text{total assets}} - 0.044 * \ln(\text{total assets}) + 0.102 * \text{industry sales growth} - 0.035 * \text{sales growth} \quad (2)$$

As an additional financial constraint measure the Cleary-index (Cleary, 1999) is used. The method of Cleary (1999) suggests that the sample of US firms is divided into three subsamples according to the dividend payment policy which is being followed be each sample firm. The first group consists of firms which increase dividends and are likely not financially constrained. The second group consists of firms which cut dividends and are likely financially constrained, while the third group consists of firms which do not change their dividend payment policy. His basic tool is a discriminant analysis he performs in order to discover firm characteristics that are related with the categorisation of firms into the above mentioned three groups.

To calculate Cleary-index (Cleary, 1999) with Greek coefficients is needed a "dummy" variable is needed as the dependent variable. This "dummy" variable takes the value of 1 if a firm increases dividends and takes the value of 0 if a firms decreases dividends. This variable is controlled for current ratio, fixed charge coverage, financial slack divided by lagged capital, net income margin, sales growth, and the debt ratio. To create the index all coefficients of variables that are significant at the 5 per cent level are used.

Consistent with Glaser *et al.* (2008) it is expected that this fourth index will best rank Greek firms in analysing the link between managerial optimism and corporate investment for financially constrained firms due to the fact that it is calibrated for a European country (Germany) and thus may serve as a better proxy for the Greek case too. Moreover, it includes the natural logarithm of assets to incorporate firm size to capture one significant case of financial constraints, the high costs of external funds.

Financial constraints scores with the calculation of Cleary-index (Cleary, 1999)

A Probit regression is run in order to calculate the Cleary-index (Cleary, 1999). The choice is this type of regression, due to the fact that the dependent variable is dichotomous and can only take two values. The dependent variable is a "dummy" variable that takes the value 1 if the firm increases dividends, and takes the value 0 if the firm cuts dividends. Our dependent variable is regressed across several independent variables. Current ratio, fixed charge coverage, financial slack divided by lagged capital, net income margin, sales growth, long term debt divided by total assets, and the natural logarithm of total assets.

The regression equation that arises with the use of the Probit regression is presented below. It has a similar form with the linear regression equation with the difference that the dependent variable Y takes the form of $\Phi^{-1}(\pi)$ because Y cannot be observed; only the consequences of Y can be observed. If Y is below a certain level, one is able to observe a success. Otherwise, we are forced to observe a failure. The regression of the dependent variable Y on several independent variables X_1, X_2, ..., X_7, displays how the boundaries between success and failure change with the incorporation of the independent variables X. The area under the normal curve below the values of the dependent variable Y, is the probability of a success for the controlling independent variables X. As the values of X change, the

boundary values of Y_x change, having as a result the change of the probability of success. Formally, the area under the curve less than Y (the standard normal cumulative function) is denoted as:

$$\Phi(y) = \int_{-\infty}^{Y} \frac{1}{\sqrt{2\pi}} e - \frac{x^2}{2} \, dx \qquad (3)$$

Thus, the Probit linear regression model can be written as:

$$\pi = \Phi(b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7) \qquad (4)$$

This equation gives the model the form of the inverse link. One can, therefore, write the Probit model in terms of the link function as follows:

$$\text{Probit}(\pi) = \Phi^{-1}(\pi) = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + \varepsilon \qquad (5)$$

$\Phi^{-1}(\pi)$ = the value of the dependent variable ("dummy" variable)
X_1, X_2, ..., X_7 = the values of the independent variables (current ratio, fixed charge coverage, financial slack/lagged capital, net income margin, sales growth, long term debt/total assets, and the natural logarithm of total assets)
b_0 = constant
b_1, b_2,..., b_7 = coefficients
ε = the error term

Optimism and financial constraints

Fixed effects panel regression of capital expenditures on several control variables is used for the one third of all stocks with the highest financial constraints as identified by the indices of Kaplan and Zingales (1997), Whited and Wu (2006), Cleary (1999), and Glaser *et al.* (2008) in order to examine the impact of the behaviour of optimistic managers to firm financial constraints. The methodology followed is the one of Glaser *et al.* (2008) and, thus, the firms are separated according to how financially constrained they are. It states that the investment-cash flow sensitivity of firms with optimistic managers is more pronounced in financially constrained (equity dependent) firms. The classification of managers into optimistic and not optimistic is done by the use of the managerial "dummy" variable. The "dummy" variable is equal to 1 when members of the Executive Board and the Supervisory Board (ALL), only the Executive Board (EB), or only CEO are classified as optimistic in a given year.

The next step is to assess the constraint scores on all three groups of managers of the study (ALL, EB, and CEO) and run several regressions with dependent variable the capital expenditures divided by lagged assets. The choice is to use as independent variables cash flow divided by lagged assets, lagged Tobin's Q, managerial optimism, as well as the optimism × (cash flow/lagged assets) based on the methodology of Malmendier and Tate (2005a). This new independent variable is constructed to test, due to the fact that Glaser and Hirn (2007) showed that firms which display the

highest financial constraints normally do not display the highest investment-cash flow sensitivity, and therefore it is not possible to split the sample in optimistic managers and not optimistic managers. All regressions include firm and year fixed effects and the time period tested is 2007 to 2012.

Therefore, for the dependent variable CAPEX/lagged assets (dependent or criterion) and the independent variables (independent or predictors) cash flow/lagged assets, lagged Tobin's Q, managerial optimism, and optimism × (cash flow/lagged assets) the regression equation that arises with the use of the least square methods has the next form:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \varepsilon \qquad (6)$$

Y = the values of the dependent variable (CAPEX/lagged assets)
X_1, X_2,...,X_4 = the values of the independent variables [cash flow/lagged assets, lagged Tobin's Q, managerial optimism, and optimism × (cash flow/lagged assets)]
b_0 = constant
b_1, b_2,...,b_4 = coefficients
ε = the error term

4. Empirical Findings

Descriptive statistics of financial constraints

Table 1 presents descriptive statistics of different firm characteristics for constraint terciles (low, middle and high levels of constrained firms) that are based on all four indices that were analysed above. The results confirm the results of Glaser and Hirn (2007) and Glaser et al. (2008). Constrained firms exhibit a lower profitability, a lower pay-out ratio, a lower excess value (natural logarithm of the ratio of a firm's actual value to its imputed value), and are more likely to be financially distressed.

The results based on Kaplan-Zingales-index (Kaplan and Zingales, 1997) show a difference in values of Tobin's Q. Firms with high financial constraint values exhibit lower values of Tobin's Q when compared to firms belonging to groups with low and middle financial constraint scores. Moreover, the ratio of capital expenditures divided by lagged assets also displays a downward trend for financially constrained firms. This can be interpreted in the way that financially constrained firms usually cope with a wedge between the internal and external cost of funds. When the wedge between the internal and external cost of funds increases, a firm is considered to be more financially constrained.

Sales growth is another variable that must be analysed since it depicts the progress of a firm regarding its sales as well as its general performance. Sales growth is an indicator which is considered positive for a firm's profitability as well as survival, since it may result in higher stock prices, or increased dividend payments for shareholders. Measured for all three groups of financial constraints (low, middle, and high degree) with the Kaplan-Zingales-index (Kaplan and Zingales, 1997) it can be seen that sales growth of financially constrained firms is importantly lower than sales growth of firms which are not financially constrained.

It seems that financial constraints exhibit a significant power to resist to the profitability of firms, to their growth of sales and excess value. Even firm size does not play an important role in this analysis for financially constrained firms using the Cleary-index (Cleary, 1999). To summarise, descriptive statistics provide us with some very useful results. Consistent with prior literature of Glaser and Hirn (2007) and Glaser et al. (2008) this work finds that financially constrained firms display a lower profitability, a lower pay-out ratio, and are more likely to become financially distressed than firms with middle or low levels of financial constraints. This is unambiguous since being financially constrained a firm has to cope with a significant wedge between the internal and external cost of funds. When this wedge between the internal and external cost of funds increases, a firm is considered to be more financially constrained.

According to Kaplan and Zingales (1997) higher investment-cash flow sensitivities are considered as evidence of higher financing constraints. On one hand it is easy to show that constrained firms are sensitive to internal cash flow. On the other hand, it is not that obvious that the extend of the sensitivity increases in the degree of financing constraints. However, one should underline the fact that investment is sensitive to cash flow for most of the firms analysed in this sample. This can be interpreted in the way that external funds cost more than internal funds for all firms with the necessary condition of the involvement of transactions costs.

Financial constraints and the effects of managerial optimism

Cash flow is generally highly correlated with investment opportunities. Constrained firms when there are favourable investing opportunities, also tend to invest more and consequently issue additional debt to finance these opportunities. Additionally, Tobin's Q as well as managerial optimism as independent variables also display lower coefficient statistic values when compared to the whole sample firms. This result is consistent with Kaplan and Zingales (1997), Cleary (1999, 2006) and Glaser and Hirn (2007).

However, the regression specification does not take into account the effect of debt financing. As a consequence, the investment-cash flow sensitivity of unconstrained firms is enlarged. The difference between unconstrained firms and constrained firms is that on one hand unconstrained firms, with more cash flow, tend to use debt in order to increase both their investment as well as their dividend payment, and on the other hand, constrained firms have to choose whether to apportion their cash flow to investment or dividend payments. Therefore, the link between investment and cash flow sensitivity is weaker for constrained firms (Moyen, 2004).

The focus is on the newly added control variable of *optimism* × (cash flow divided by lagged assets) that was previously introduced. The constraint scores that are of particular interest are the ones based on the index of Glaser *et al.* (2008). As thoroughly analysed in the previous chapter, the most appropriate index to examine the financial constraints of the sample firms is the Glaser-Schafers-Weber-index (Glaser *et al.*, 2008). It contains the natural logarithm of total assets in order to

capture the essence of firm size in the results. It has already been tested for German firms and as Glaser *et al.* (2008) state, this index is the most suitable to be used for European firm samples. For this reason, the focus is placed on the results of the last three regressions (10 to 12).

Table 1: Characteristics of financial constraints scores

Method of constraints calculation / Constraints		Kaplan Zingales			Whited Wu			Cleary			Own		
		Low	Middle	High	Low	Middle	High	Low	Middle	High	Low	Middle	High
Lagged Tobin's Q	Mean	1.655	1.474	1.406	1.414	1.679	1.408	1.399	1.408	1.396	1.457	1.543	1.432
	Median	1.580	1.430	1.400	1.430	1.630	1.420	1.410	1.410	1.390	1.425	1.412	1.395
Total asset (thousand Euro)	Mean	125,580	106,300	77,500	109,220	132,770	108,980	106,960	108,010	105,650	135,630	135,400	132,900
	Median	129,500	110,460	108,060	109,750	134,720	109,420	106,820	73,436	104,710	106,240	130,100	125,400
Cash flow/lagged assets	Mean	1.981	1.582	1.566	0.439	0.685	0.455	1.070	0.593	0.455	1.342	1.314	1.298
	Median	0.670	0.480	0.440	0.420	0.680	0.460	0.135	0.600	0.450	0.245	0.298	0.266
CAPEX/lagged assets	Mean	0.078	0.046	0.046	0.047	0.077	0.047	0.047	0.047	0.046	0.055	0.232	0.049
	Median	0.070	0.050	0.050	0.050	0.070	0.050	0.050	0.050	0.050	0.051	0.046	0.056
EBIT/lagged assets	Mean	-0.070	-0.063	-0.002	-0.070	-0.007	-0.070	-0.072	-0.066	-0.074	-0.063	-0.053	-0.065
	Median	-0.074	-0.065	-0.003	-0.076	-0.010	-0.078	-0.074	-0.066	-0.076	-0.058	-0.053	-0.064
Firm age	Mean	15.463	15.449	15.534	15.520	15.548	15.542	15.420	15.162	15.632	14.898	14.685	14.885
	Median	15.673	16.675	15.895	15.233	16.543	16.473	15.432	15.549	16.562	15.865	14.753	14.764
Sales growth	Mean	0.270	0.210	0.150	0.230	0.260	0.190	0.440	0.280	0.190	0.430	0.180	0.120
	Median	0.142	0.147	0.152	0.166	0.174	0.167	0.160	0.146	0.129	0.157	0.157	0.153
Cash/lagged assets	Mean	0.128	0.091	0.080	0.124	0.118	0.089	0.146	0.145	0.124	0.119	0.149	0.112
	Median	0.110	0.080	0.170	0.140	0.080	0.170	0.120	0.050	0.170	0.160	0.120	0.120
Pay-out ratio (dividend payment/assets)	Mean	0.015	0.023	0.014	0.018	0.029	0.016	0.021	0.008	0.005	0.028	0.029	0.006
	Median	0.017	0.016	0.000	0.015	0.019	0.000	0.004	0.008	0.000	0.006	0.017	0.000
Excess value	Mean	0.170	0.140	-0.170	0.050	0.070	-0.250	-0.180	-0.250	-0.140	-0.020	-0.050	-0.230
	Median	0.166	0.145	0.000	0.057	0.081	0.000	0.169	0.241	0.000	0.018	0.039	0.000
Pay-out ratio in (dividend payment/earnings)	Mean	13.760	15.000	4.150	3.590	9.110	2.220	12.190	11.790	3.330	10.780	9.350	9.340
	Median	0.700	0.570	0.630	0.660	0.750	0.620	0.620	0.660	0.500	0.720	0.500	0.700
Leverage ratio	Mean	0.620	0.580	0.530	0.690	0.690	0.490	0.660	0.590	0.520	0.710	0.640	0.570
	Median	-0.070	-0.002	-0.063	-0.070	-0.007	-0.070	-0.066	-0.074	-0.072	-0.065	-0.053	-0.063

This table shows several characteristics of constraints terciles as indentified by the Kaplan-Zingales-index, the Whited-Wu-index, the Cleary-index (with own coefficients) and Glaser-Schafers-Weber-index. All variables are winsorised at the 1 per cent level.

The next step is to test the new optimism control variable that was introduced in the regression model (Table 1). One can observe that for the Glaser-Schafers-Weber-index (Glaser *et al.*, 2008) the optimism × (cash flow divided by lagged assets) variable is significant in all regressions for all three groups of managers (All, Executive Board, and CEO). This control variable is significant in ALL regressions for the Kaplan-Zingales-index (Kaplan and Zingales, 1997) as well as for the Whited-Wu-index (Whited and Wu, 2006), and in CEO regression for the Cleary-index (Cleary, 1999). The results are similar when lagged constrained measures are incorporated. It is not surprising, though, due to the fact that there is some persistence of the ranking of firms over time (Glaser and Hirn, 2007).

However, not consistent with Glaser *et al.* (2008) is the fact that there is no strong evidence regarding optimism and CEO transactions. The stronger results of Glaser *et al.* (2008) are found for the regressions when optimism is based on CEO transactions. This work's findings, therefore, do not consolidate the fact that CEOs play a key-determinant role in firm performance and corporate outcomes (Bertrand and Schoar, 2003; Bennedsen, Perez-Gonzalez and Wolfenzon, 2006).

Interestingly, as already mentioned above in regressions using the Glaser-Schafers-Weber-index (Glaser *et al.*, 2008) all *optimism × cash flow* variables are significantly related with capital expenditures (regressions 10 to 12). This work, therefore, is able to state that the investment-cash flow sensitivity of firms with optimistic managers is more pronounced in financially constrained (equity dependent) firms, and thus confirm research question of this study.

Table 2: Empirical results: Optimism and financial constraints

Constraints score Optimism based on	Kaplan-Zingales			Whited-Wu			Cleary			Glaser-Schafers-Weber		
	All	EB	CEO	All	EB	CEO	All	EB	CEO	All	EB	CEO
	1	2	3	4	5	6	7	8	9	10	11	12
Cash flow/lagged Assets	0.008	0.010	0.014	0.010	-0.008	0.012	0.012	0.012	0.016	0.011	0.012	0.010
	(0.009***)	(0.008***)	(0.007***)	(0.030*)	(0.028*)	(0.006***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)
Lagged Tobin's Q	0.070	0.023	0.010	0.067	0.019	0.010	0.036	0.037	0.035	0.039	0.036	0.043
	(0.007***)	(0.004***)	(0.007***)	(0.008***)	(0.005***)	(0.010***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)
Managerial Optimism	-0.088	-0.012	-0.006	-0.022	0.011	-0.005	0.001	-0.001	0.003	0.004	0.005	0.002
	(0.005***)	(0.005***)	(0.007***)	(0.009***)	(0.005***)	(0.005***)	0.495	0.741	0.309	0.234	0.297	0.559
Optimism * (cash flow/lagged assets)	-0.090	0.003	0.110	-0.020	0.012	0.005	0.003	0.134	0.200	0.212	0.122	0.220
	(0.030*)	0.857	0.118	(0.050*)	0.129	0.435	0.524	0.170	(0.060*)	(0.070*)	(0.100*)	(0.070*)
Constant	0.046	0.044	0.049	0.047	0.044	0.050	-0.015	-0.016	-0.014	-0.023	-0.019	-0.027
	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.000***)	(0.019*)	(0.000***)	(0.076*)	(0.000***)
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Cases	1202	588	614	1202	699	503	1187	663	524	1175	754	421
Firms	61	61	61	61	61	61	61	61	61	61	61	61
Adjusted R-squared	0.393	0.189	0.261	0.347	0.280	0.238	0.181	0.351	0.181	0.273	0.196	0.447

This table shows fixed effects panel regression results of capital expenditures on several control variables for the one third of all firms with the highest financial constraints as identified by the Kaplan-Zingales-index, the Whited-Wu-index, the Cleary-index (with own coefficients), and Glaser-Schafers-Weber-index. The dependent variable is capital expenditures divided by lagged assets. In all regressions, we analyse cash flow divided by lagged assets and lagged Tobin's Q as control variables. Furthermore, we also include an optimism "dummy" variable and Optimism * (cash flow divided by lagged assets) as explanatory variables. The "dummy" variable is equal to 1 when members of the EB and SB (ALL), only the EB, or only CEOs are classified as optimistic in given year. All regressions include firm and year fixed effects. Time period is 2007-2012. All variables are winsorised at the 1 per cent level. Robust p-values are in parentheses. *** indicates significance at 1 per cent, ** indicates significance at 5 per cent and * indicates significance at 10 per cent.

5. Conclusions

Research in the field of Behavioural Finance and optimism as a cognitive, personal characteristic, is a rapidly developing field. Usually, optimism is correlated with positive outcomes for the independent director (Ravina and Sapienza, 2010) as well as for his firm too. However, the extensive use of optimism in all aspects of everyday life can prove disastrous since over-optimism may often be associated with negative outcomes too. Yet, it should be underlined that being moderately optimistic regarding a future event may induce great personal profits.

It is widely accepted by researchers that managers principally are optimistic. They display optimism in every single aspect of their career. Often, optimism slips into overconfidence and arrogance inducing unfavourable outcomes for the manager and his firm. If the term "hubris" is used for every action of a manager which incorporates overconfidence, one is easily able to see that this "hubris" may often lead the manager to face his personal downfall, not only his firm's decline.

The investment-cash flow sensitivity has also been examined in this thesis regarding the impact of financial constraints on investment. The general assumption that exists is based on the statement that the sensitivity of investment to cash flow should be higher for financially constrained (equity dependent) firms. These firms are forced to cope with the monotonicity hypothesis which

implies that there is a wedge between the internal and external costs of funds. The use of investment-cash flow sensitivity, therefore, has become something of a standard in recent years as far as corporate finance literature is concerned (Shin and Stulz, 1998; Malmendier and Tate, 2005a; Almeida and Campello, 2007; Glaser *et al.*, 2008).

This study added to the existing literature on the field of managerial optimism, by examining its impact on corporate investment for the case of Greece. As part of the literature which links psychological and economic variables to test behavioural finance models, this study is the first to investigate managerial optimism and its impact on corporate investment in Greece. The importance of this study lied in finding how managerial decision making works within a firm, how biased a manager is when he has to make extremely important decisions regarding the firm's future performance and success, and how managerial optimism affects corporate investment decision making.

Additionally, this work confirmed the Research Question too. Financially constrained firms compared to the whole sample of firms did not display high investment-cash flow sensitivities. Constrained firms when there are favourable investing opportunities, have the tendency to invest more. They tend to issue more debt in order to be able to finance these advantageous investing opportunities. Moreover, there was no strong evidence regarding optimism and CEOs' transactions. This work's findings did not justify the fact that a CEO plays

a significant role in corporate firm performance. Therefore, in financially constrained firms, the investment-cash flow sensitivity with optimistic managers was more noticeable. The fact that a firm is financially constrained implies that optimistic managers affect cash flow of investment at a higher level than managers who are not optimistic. Again, optimism as a managerial cognitive characteristic played an important role in corporate investment decision making.

References

Adam, T. R., V. Burg, T. Scgeinert and D. Streitz (2014), Managerial Optimism and Debt Contract Design: The Case of Syndicated Loans, *Discussion Paper Series of SFB/TR 15 Governance and the Efficiency of Economic Systems from Free University of Berlin, Humboldt University of Berlin, University of Bonn, University of Mannheim, University of Munich.*

Almeida, H. and M. Campello (2007), Financial constraints, asset tangibility, and corporate investment, *Review of Financial Studies*, **20**(5), 1429-1460.

Baccar, A. B. M. Ezzeddine and A. Bouri (2013), Managerial Optimism, Overconfidence and Board Characteristics: Toward a New Role of Corporate Governance, *Australian Journal of Basic and Applied Sciences*, **7**(7), 287-301.

Barros, L. A. B. and A. Silveira (2009), Overconfidence, managerial optimism and the determinants of capital structure, *Brazilian Review of Finance*, **6**(3), 293-335.

Beber, A. and D. Fabbri (2012), Who times the foreign exchange market? Corporate speculation and CEO characteristics, *Journal of Corporate Finance*, **18**(5), 1065 − 1087.

Bennedsen, M., F. Perez-Gonzalez and D. Wolfenzon (2006), *Do CEOs matter?*, Working Paper No FIN-06-032, New York: New York University.

Berger, P. G. and E. Ofek (1995), Diversification's effect on firm value, *Journal of Financial Economics*, **37**(1), 39-65.

Bertrand, M. and A. Schoar (2003), Managing With Style: The Effect of Managers on Firm Policies, *Quarterly Journal of Economics*, **118**(4), 1169-1208.

Bris, A., Y. Koskinen and M. Nilsson (2006), The Real Effects of the Euro: Evidence from Corporate Investments, *Review of Finance*, **10**(1), 1-37.

Chandler, A. D., (1977), *The Visible Hand*, Cambridge: Belknap Press.

Cleary, S. (1999), The Relationship between Firm Investment and Financial Status, *Journal of Finance*, **54**(2), 673-692.

Doukas, J. A. and D. Petmezas (2007), Acquisitions, Overconfident Managers and Self-attribution Bias, *European Financial Management*, **13**(3), 531-577.

Fazzari, S., R. G. Hubbard and B. C. Petersen (1988), Financing constraints and corporate investment, *Brookings Papers on Economic Activity*, **0**(1), 141-195.

Glaser, M. and C. Hirn (2007), *The Measurement of Corporate Financial Constraints*, Working Paper, Mannheim: University of Mannheim.

Glaser, M. and M. Weber (2007), Overconfidence and Trading Volume, *Geneva Risk and Insurance Review*, **32**(1), 1-36.

Glaser, M. and S. Muller (2010), Is the Diversification Discount Caused by the Book Value Bias of Debt?, *Journal of Banking and Finance*, **34**(10), 2307-2317.

Glaser, M., P. Schafers and M. Weber (2008), Managerial optimism and corporate investment: Is the CEO alone responsible for the relation?, AFA 2008 New Orleans Meetings Paper.

Griffin, D. and L. Brenner (2004), Perspectives on probability judgment calibration, in: D. J. Koehler and N. Harvey, eds. *Blackwell Handbook of Judgment and Decision Making*, Oxford: Blackwell, 177-199.

Hackbarth, D. (2008), Managerial traits and capital structure decisions, *Journal of Financial and Quantitative Analysis*, **43**(4), 843-882.

Heaton, J. B. (2002), Managerial Optimism and Corporate Finance, *Financial Management*, **31**(2), 33-46.

Huang, J. and D. J. Kisgen (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics*, **108**, 822−839.

Jensen, M. (1986), Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review*, **76**(2), 323-329.

Kahneman, D., P. Slovic and A. Tversky (1982), *Judgement under Uncertainty: Heuristics and Biases*, Cambridge: Cambridge University Press.

Kaplan, S. N. and L. Zingales (1997), Do Investment-cash flow Sensitivities Provide Useful Measures of Financing Constraints, Quarterly Journal of Economics, 112(1), 169-215.

Kaplan, S. N., M. M. Klebanov, and M. Sorensen (2012), Which CEO characteristics and abilities matter? Journal of Finance 67, 973−1007.

Lang, L. H. P. and R. E. Stulz (1994), Tobin's q, corporate diversification and firm performance, *Journal of Political Economy*, **102**(6), 1248-1280.

Lin, Y., S. Hu and M. Chen (2008), Testing pecking order prediction from the viewpoint of managerial optimism: Some empirical evidence from Taiwan, *Pacific-Basin Finance Journal*, **16**(1-2), 160-181.

Malmendier, U. and G. Tate (2005a), CEO Overconfidence and Corporate Investment, *Journal of Finance*, **60**(6), 2661-2700.

Malmendier, U. and G. Tate (2005b), Does overconfidence affect corporate investment? CEO overconfidence measures revisited, *European Financial Management*, **11**(5), 649-659.

Malmendier, U. and G. Tate (2008), Who makes acquisitions? CEO overconfidence and the market's reaction, *Journal of Financial Economics*, **89**(1), 20-43.

Moyen, N. (2004), Investment-cash flow Sensitivities: Constrained versus Unconstrained Firms, *Journal of Finance*, **59**(5), 2061-2092.

Myers, S. C. (1977), The determinants of corporate borrowing, *Journal of Financial Economics*, **5**(2), 147-175.

Oskamp, S. (1965), Overconfidence in case study judgements, The *Journal of Consulting Psychology*, **29**(3), 261-265.

Ravina, E. and P. Sapienza (2010), What do independent directors know? Evidence from their trading, *The Review of Financial Studies*, **23**(3), 962-1003.

Roll, R. (1986), The hubris hypothesis of corporate takeovers, *The Journal of Business*, **59**(2), 197-216.

Shin, H. and R. Stulz (1998), Are internal capital markets efficient?, *Quarterly Journal of Economics*, **113**(2), 531-552.

Stulz, R. M. (1990), Managerial discretion and optimal financing policies, *The Journal of Financial Economics*, **26**(1), 3-27.

Tversky, A. and D. Kahneman (1981), The framing of decisions and the psychology of choice, *Science*, **211**(4481), 453-458.

Tversky, A. and D. Kahneman (1986), Rational choice and the framing of decisions, *The Journal of Business*, **59**(4), 251-278.

Villalonga, B. (2004a), Diversification discount or premium? New evidence from the business information tracking series, *The Journal of Finance*, **59**(2), 475-502.

Villalonga, B. (2004b), Does diversification cause the 'diversification discount'?, *Financial Management*, **33**(2), 5-27.

Weinstein, N. D. (1980), Unrealistic optimism about future life events, *The Journal of Personality and Social Psychology*, **39**(5), 806-820.

Weston, J. F. (1970), The nature and significance of conglomerate firms, *St John's Law Review*, **0**(44), 66-80.

Whited, T. M. and G. Wu (2006), Financial Constraints Risk, *Review of Financial Studies*, **19**(2), 531-559.