CEO's Power of Influence on Board of Directors and its Impact on Capital Structure

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Abstract

This paper investigates the influence of the Chief Executive Officer on capital structure. To quantify the magnitude of this impact the board capture measure is constructed on the basis of CEO's tenure, ownership and past performance. The broader contribution of this paper is to show that the spread of power between CEO and CFO can in part explain the capital structure decision. It is found that the CEO's board capture is negatively associated with leverage and this relation may be constrained by a strong CFO. Moreover the impact of the CFO becomes more significant in the period of financial crisis.

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1. Introduction

Since the seminal work of Modigliani and Miller (1958) financial economists have strongly developed research on the determinants of the capital structure. Next to tax advantage and bankruptcy costs a commonly discussed determinant is the manager-shareholder conflict, which in the literature is called the agency problem (Jensen & Meckling, 1976). The agency problem is the manager-shareholder conflict that appears in a large publicly listed firm due to separation of ownership and control. Thus, ownership is in the hands of shareholders who are represented by the board of directors, who have ultimate decision-making authority. The board consists of managing executives together with controlling and disciplining non-executive directors. The agency costs appear as a result of conflicting interests, as the board of directors may not act in the best interest of shareholders, but in their own. Indeed, it cannot be expected that executives would watch over the company as if it was their own. This risk of wealth expropriation is costly for shareholders as they need to employ monitoring mechanisms apart from the non-executive part of the board. The functionality of boards of directors is questioned because of the information asymmetry that affects it. In this regard, Monks (2008) argues that most shareholders have little control over boards, who themselves are so weakly informed that they have reduced ability to analyse a management's behaviour.

The twofold impact of the agency conflict on leverage (Jensen, 1986) dominates the literature. The theory suggests that on the one hand managers

would try to avoid high levels of leverage as it induces constraints on them. On the other hand shareholders want to increase leverage to the optimal level to reduce the agency costs and increase firm value.

This paper explores the impact of characteristics of executives on the corporate leverage decision by focusing on the fact that managers are heterogeneous regarding their attitude towards optimal leverage and therefore may pursue different leverage policies. Contrary to the assumption that managers are a homogeneous body, in line with more recent studies (e.g., Graham, Harvey, & Puri, 2010; Wang, Shin, & Francis, 2011) we distinguish between managers with regard to their power, responsibilities and incentives towards financial decision making. In general executives work in a hierarchy that provides board of directors with the greatest power of control and the chief executive officer (CEO) with the ability to influence corporate financial and investment decisions. In this paper, we explore the impact of CEOs on the leverage decision. The extent of the CEO's influence on the decisions is determined by his power on the board. By 'power' is meant the degree of influence exerted by the CEO on boards' corporate leverage decision. Following Hermalin & Weisbach (1998) and Masulis & Mobbs (2011) the CEO's power is estimated by the 'board capture' index. The board capture is determined by tenure (measured by number of years), past performance (measured by ratio of operating cash flow to total assets), and ownership (measured by percentage shares outstanding). It increases over CEO's tenure, is enlarged by good past performance, and is incentivised by the CEO's

ownership in the company. The more powerful the CEO becomes, the greater is his influence on leverage decisions. Our main hypothesis in the paper is that the CEO's board capture is expected to be negatively associated with leverage as higher leverage limits managerial discretion[2].

Clearly, the leverage decision is not entirely determined by the CEO. The executive that also influences the firm's leverage policy is normally the Chief Financial Officer (CFO) that is the other executive considered in this paper. The CFO is in charge of the financial reporting process, which gives him a considerable insight into the firm's financial issues. Despite greater levels of interest and involvement in the leverage decision making process, the degree of his influence is determined by his power on the board in relation to the influence (power) of the CEO.

The spread of power between the two executives (CEO and CFO) gains relevance in terms of capital structure, considering the diverse preferences they are likely to have towards the firm's leverage policy[3]. More specifically, the CFO in a comparison to the CEO has additional reputation incentives that make him adhere to an optimal leverage policy (Jian & Lee, 2011). The CFO is not at the top of a company's hierarchy and hence the promotional incentives are of special importance. Thus, as his appraisal is based on the

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[2] Moreover the main criterion of CEO's assessment is not based on leverage policy but firm's performance; therefore the CEO naturally cares more about the latter.
[3] Naturally, it may be the case that the CFO colludes with the CEO in determining leverage and they act homogeneously as the agency theory predicts. Namely, the CEO and the CFO avoid leverage. In these circumstances the spread of power between the executives loses importance. Still, in this paper the alternative situation is explored, where the actions and incentives of the CEO and CFO do not coincide.

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quality of the financial policies, he would pay closer attention to the relevance and impact of leverage policies on, for example, firm value. The assessment of the CEO is however more likely to depend on a firm performance. CFOs are likely to exercise monitoring using leverage that reduce the degree of CEO's entrenchment and hence constraints his ability to use free cash flow freely. In other words the increase of leverage to a higher level may be used by the CFO as a corporate governance mechanism against the CEO's self-serving behaviour. Furthermore, in these circumstances the level of leverage which is desired by the CFO is more optimal in comparison to the one preferred by the CEO, and therefore it is in line with shareholders' preferences.

Considering the above it is argued that the impact of the CEO's board capture on leverage is influenced by the presence of a strong CFO. The influence of a CEO with high board capture on leverage is more significant when the position of CFO on the board is weaker. To assess the strength of the CFO's position on a board in comparison to that of the CEO the 'CFO Index' is estimated.

The estimation of the CFO's power differs from the creation of the board capture index (from now on BC). This is driven by two aspects that underline major differences in the CEO and CFO's positions in a firm. Firstly, the CFO unlike the CEO is not assessed on past performance – i.e. stronger attention is directed towards financial policies like leverage, dividends, and investment. Hence, past performance does not influence his power as significantly as in

the case of the CEO. Secondly, the CFO normally comes after the CEO in the firm's hierarchy. Therefore, to be strongly influential on the board he must be independent of the CEO and stronger than he is. Thus measures used in the creation of BC, i.e. tenure (measured by number of years as in BC) and ownership (in percentage of shares outstanding) are not sufficient proxies.

Instead, to estimate the power of the CFO in relation to the CEO, their attributes regarding tenure, ownership, and age are compared and captured by the corresponding dummy variables. Also, to indicate the independence of the CFO the number of his external affiliations is measured. A set of dummy variables is included in the CFO Index.

The first dummy captures the CFO's tenure − introduced as a measure of director's independence by Landier, Sraer, & Thesmar (2006)[4]. The CFO is classified as an independent of the CEO if his tenure is longer than the CEO's. Longer tenure guarantees that the CEO did not participate in the CFO's recruitment process and therefore the risk that the CFO deepens the CEO's entrenchment is diminished (Fracassi & Tate, 2011).

The second dummy is based on CFO's age, which was analysed by Acharya, Myers, & Rajan (2011) in their analysis of executive suite based on different time horizons of executives. The CFO's age increases his power if he is older than the CEO, and so carries longer work experience.

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[4] In Landier et al (2006) a top executive is ''independent from the CEO'' if he joined the firm before the current CEO was appointed. Therefore in the robustness test we introduce the total number of years in a firm of CFO, including years prior the position of financial executive.

The third dummy variable is derived from the CFO's ownership, which constitutes a sign of greater power than that of the CEO if it is larger than the CEO's, as it gives a greater impression of enhanced control (Denis, Denis, & Sarin, 1997) and leads to better goals' alignment (Jensen & Meckling, 1976).

Finally, a dummy variable is created on the basis of the number of the CFO's external directorships, which was introduced by Jian & Lee (2011) as a measure of executive reputation, and by Masulis & Mobbs (2011) as a measure of director's quality. Having one or more external directorships by CFO indicates his greater career independence of the CEO. Continuously he is more likely to take a stance on the board against the CEO and thereby he performs better as a monitor.

The analysed spread of power between the executives gains relevance in a period of unstable economic conditions, when prompt adaptation to change is required; for instance in the period of the recent financial crisis. Since the monitoring efficiency of non-executive directors is adversely affected by information asymmetry, in the need of immediate change it may decrease significantly. Therefore in a period of financial crisis the corporate decisions (including leverage) may be left to be made by the executive suite. Hence, the CEO, advantaged by access to all available information, may influence decisions to a greater extent. In contrast the CFO may be the one to be able to determine whether the CEO's actions are in the best interests of the firm. As a result of possessing different incentives from the CEO, he can monitor and influence the CEO's impact on leverage and other financial decisions.

For empirical purposes both indexes (BC and CFO Index) are created with the application of Principal Component Analysis (PCA). PCA is a system that seeks a linear combination of variables so that the maximum variance is extracted. Once the system extracts the maximum variance it excludes it and seeks the next one. In this analysis the first components are used as indexes. Using an index helps to control for multicollinearity problems that may arise when several determinants are used in cross-sectional analysis (Florackis & Ozkan, 2009; Fracassi & Tate, 2011). Additionally, as it decreases dimensions in the data it eases the interpretation of results.

This research strongly contributes to the corporate finance literature. Specifically, in one of the first academic attempts, the effect of a powerful CEO on the leverage policy conditional on the presence of a stronger CFO is analysed. Consequently, the outcomes of this research contribute to the recent stream of research in the area of corporate governance that investigates the executive part of the board (Acharya, et al., 2011; Chava & Purnanandam, 2010; Fracassi & Tate, 2011; Hermalin & Weisbach, 1998; Landier, et al., 2006; Masulis & Mobbs, 2011; Wang, Shin, & Francis, 2011). The examination of the CEO's power explores the board capture measure introduced by Hermalin & Weisbach (1998) and Masulis & Mobbs (2011).

Also, this research adds value to the emerging stream of literature that proves the importance of managerial characteristics' impact on corporate decisions (Baker et al., 2005; Bertrand and Schoar, 2003; Graham et al., 2008; Malmendier et al., 2010; Malmendier and Tate, 2005). The distinctive feature

of this research is that it not only considers the CEO's characteristics as in Malmendier, et al. (2010) and Malmendier & Tate (2005) but it also introduces the features of the CFO. Previous studies did not consider them simultaneously because of data unavailability. More to the point, Malmendier, et al. (2010) and Malmendier & Tate (2005) support their analysis by the assumption that normally the CEO and the CFO agree on financial decisions, and so the features of the CEO should be the most important managerial characteristics in determining the level of leverage. However in this paper an alternative situation is analysed, that is when the CEO and the CFO do not agree on financial decisions.

Furthermore in this paper, light is shed on the spread of power between CEO and CFO and its impact on leverage in conditions of financial crisis – conditions in which information asymmetry has particular impact. This develops the idea initiated by Landier, Sraer and Thesmar (2006) who argue that in unstable economic conditions the presence of strong executives in the means of corporate governance becomes even more relevant than the independent boards of directors. The test of a strong CFO presence on the board during the period 2007-2009 builds on the research of Schoar and Washington (2011), who suggest that good corporate governance practices are born in bad times. Also the study benefits from the UK data, which is affected by the British regulatory system that fails to enforce the duties of non-executive directors and consequently leads to their passive approach

and facilitates the greater entrenchment of the CEO (Franks, Mayer, & Renneboog, 2001).

The remainder of the paper is structured as follows. Section 2 develops the hypotheses. Section 3 defines the main variables and describes the dataset used. Section 4 presents empirical analysis. Section 5 concludes.

2. Hypothesis development

2.1. CEO's characteristics and its impact on leverage

The structure of responsibility and power of decision making in publicly traded companies is hierarchical. Executives in these firms work in a hierarchy with the CEO at the top. As a result the CEO is the most powerful individual on the board regarding financial decision making (Graham, Harvey, & Puri, 2010; Wang, et al., 2011). He is the one that can make the decision himself, or delegate it to a subordinate, who in the significant majority of cases is the CFO. If the CEO decides on leverage he has incentives to have a lower leverage than preferred by shareholders (Berger, Ofek, & Yermack, 1997), because a high level of debt in the capital structure reduces managerial discretion and flexibility. Whether he delegates the decision or not depends on his abilities to use the discretion as well as his influence on the board of directors. As his power increases and other directors are under his influence, the possibility of leverage delegation declines. The CEO's strength is also associated with lower effectiveness of the board of directors, as the CEO's subordinates, being under his influence, are less likely to take a

stance on the board to challenge him (Masulis & Mobbs, 2011). This inefficiency suggests an alternative explanation of the negative association between CEO's power and leverage, namely, excessive influence of the CEO on the board may be badly perceived by the market, which would result in higher costs of borrowing. Consequently that would reduce firm's ability to borrow and leverage would decrease.

To quantify the dominance of the CEO, the board capture (BC) index is constructed. The term 'board capture' comes from the agency theory literature and has been developed by Hermalin & Weisbach (1998) and Masulis & Mobbs (2011). It expresses the power of the CEO to influence the decision making of the board. High board capture is also associated with lower efficiency of subordinates in terms of interactions with the CEO. Specifically, subordinates who are strongly influenced by the CEO are less likely to take a stance on the board to challenge him.

The BC proxy consists of three components as suggested by Hermalin & Weisbach (1998) and Masulis & Mobbs (2011), i.e. CEO's tenure, ownership and past performance. Following, the relationships between the components and BC are examined.

Firstly the CEO's tenure is discussed. Over the tenure the CEO participates in the recruitment processes of more inside directors; hence he may select the kind of directors that will be loyal to him and more importantly will facilitate his entrenchment. Individuals chosen by the CEO are less likely to act against

him, and as a result board indepenedence declines over the course of the CEO's tenure. The tenure improves the experience of the CEO, which consequently decreases his relience on subordinates and so makes delegation of decisions (including leverage) less frequent (Berger, et al., 1997; Frank & Goyal ,2007; Graham, et al., 2010). Therefore a positive relationship between tenure and BC is expected.

The second component of the board capture is CEO's ownership. In the Board Capture Index the ownership is used as a proxy for the managerial ability of financial decisions making. Therefore the prediction is in line with the argument, which suggests that shareholders and subordinates trust a CEO with greater ownership as he bears part of the residual risk. This confidence in the CEO results in lower turnover of CEOs. Moreover, from the perspective of the CEO it implies an impression of enhanced control (Denis, et al., 1997; Eckbo & Thorburn, 2003; Mikkelson & Partch, 1997). Thus it can be expected that ownership positively influences board capture and so, negatively impacts leverage. The counter argument that uses ownership as the managerial incentive proxy comes from the seminal work of Jensen & Meckling (1976). This traditional approach indicates that ownership's relation with leverage is non-monotonic. That is, at lower levels it may help to align the CEO's interests with those of shareholders. Managers bearing part of cost of their action would not favour value-decreasing activities; in this case, decrease of leverage. Hence, at lower levels, ownership is positively associated with leverage. However, when ownership reaches a higher level it may lead to

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managerial entrenchment, which would encourage decrease of the level of leverage in a firm. The third analysed component of board capture is the CEO's past performance. Empirical evidence suggests that past performance increases the CEO's power by giving him greater influence on financial decisions (Hermalin & Weisbach, 1998; Jian & Lee, 2011; Masulis & Mobbs, 2011). Moreover a CEO with good past performance faces lower risk of replacement. Hence, it is expected that good past performance positively contributes to the board capture. In conclusion, all three CEO's characteristics collectively are expected to contribute positively to the board capture index, and hence negatively to the level of leverage.

H1. The board capture of CEO is associated negatively with leverage.

2.2. Efficiency of the independent board in monitoring CEO's power and its impact on leverage.

The important issue related to the agency conflict between the CEO and shareholders is the composition of the board. Specifically, the board's independence proxied by a percentage share of non-executives (outside directors) on the board is expected to have an influence on managerial incentives (Hermalin & Weisbach, 2003). Independent boards are employed to monitor the executives so they act in the best interest of shareholders (Mayers, Shivdasani, & Smith, 1997), and hence they have incentives to monitor the CEO (Fama & Jensen, 1983). Therefore, in case the CEO acts in his best interest and decreases leverage, an independent board is expected to signal this behaviour or to constrain it. For this purpose outside directors

may employ leverage policy, and by increasing it reduce agency costs created by CEO, and simultaneously increase the firm's value. The monitoring quality of managers by independent directors is positively associated with the percentage share of the outside directors on the board (Rosenstein & Wyatt, 1990). Hence, a positive relation between percentage share of the outside directors on the board and leverage is expected (Berger, et al., 1997; Rosenstein & Wyatt, 1990; Weisbach, 1988).

H2. The independence of the board of directors (measured by NED) is positively associated with leverage.

Nonetheless, there exists evidence that independent boards of directors as a corporate governance mechanism have several inefficiencies (Acharya, et al., 2011; Agrawal & Knoeber, 1996; Franks, et al., 2001; Monks, 2008). Firstly the quality of monitoring is strongly affected by the information assymetry between boards and management. Outside directors are mainly criticised for lack of information about the firm (Hermalin & Weisbach, 1991). Because of low frequency of meetings, the information flow is poor and board decisions may be taken by the executive part of the board which is more competent and well informed. Secondly, shareholders do not have control over boards because of their dispersion.

2.3. The importance of CFO index in affecting CEO's board capture and its impact on leverage.

Considering the above mentioned inefficiency of the independent part of the board, the recent corporate governance research directs attention to the

composition of the executive suite (Acharya, et al., 2011; Fracassi & Tate, 2011; Jian & Lee, 2011; Landier, et al., 2006; Masulis & Mobbs, 2011). The combination of executives that creates the executive part of the board is of special importance as it determines the quality of information that is provided to the board, and is fundamental for the decision making process. In this paper it is leverage decision that is explored. Therefore the attention is drawn towards the two executive directors most important in deciding on leverage, not the whole executive suite. These are the CEO - the top executive director, whose power was discussed in section 2.1; and the CFO - who is in charge of the financial reporting process, which gives him considerable insights into a firm's financial issues. As discussed above the CEO may decide on leverage by himself or to some extent allow this decision to be influenced by the CFO. The degree of influence on the decision by the CFO depends on his power on the board relative to the influence of the CEO.

The spread of power between the two executives is of special importance because of various policies that they may have incentives to adhere. Specifically, the CFO may prefer a higher level of leverage than the CEO to reduce the CEO's entrenchment. The difference of preferences towards leverage between CEO and CFO is caused by the CFO's greater attention to his reputation, on which his promotion depends. The CFO is assessed on the basis of the financial policies (including leverage); therefore normally he would treat them with special vigilance.

To quantify if the CFO is powerful enough to dominate CEO's decisions or at least influence him the CFO Index is constructed. The index is constructed on the basis of previous studies (Acharya, et al., 2011; Jian & Lee, 2011; Landier, et al., 2006; Masulis & Mobbs, 2011; Wang, et al., 2011) that underline the importance of individual features of the total executive suite (or CEO's subordinates), in addition to data analysis. Therefore the CFO Index incorporates the following components: age, tenure, and ownership, which compare the CEO to CFO, and number of external directorships, which indicates CFO's independence.

The first component is tenure. It is incorporated in the index as a dummy variable which takes a value of one if the CFO has longer tenure than the CEO. There are two reasons why longer tenure contributes to a greater CFO index. Firstly, longer tenure in comparison to the CEO gives the CFO greater experience, which gives him superior power to make financial decisions (as a result of delegation by a less experienced CEO). Secondly the fact that the CFO has worked in a company for a longer period of time means that the CEO did not participate in his recruitment process, and so the possibility that the CFO was chosen to enlarge the current CEO's power may be excluded (Acharya, Myers and Rajan, 2011; Berger, Ofek and Yermack, 1997; Frank and Goyal, 2007; Landier, Sraer and Thesmar, 2006; Masulis and Mobbs, 2011).

The second component compares CEO and CFO in terms of age. The value of one is given if the CFO is older than the CEO. In general, the older a manager gets, the more power he gains; which puts him in a good position in front of

the board and shareholders. The greater power comes with all the characteristics that are associated with larger expertise, life experience and stability. Hence, older age should improve the CFO's dominance over CEO (Bryan, Hwang, & Steven, 2000; Carlson & Karlsson, 1970; Hambrick & Mason, 1984).

The third component compares ownership of the CEO and CFO. If the CFO has larger ownership it contributes in a positive way to the CFO index. The argument follows the above discussion of the CEO's ownership where it was indicated that an ownership is a measure of the managerial ability. Therefore the CFO's ownership is positively associated with residual risk and so it aligns the CFO's goals with shareholders' (Jensen and Meckling (1976) in a drive towards an optimal capital structure. Additionally larger ownership may indicate the CFO's greater compensation for the value he adds to the board, and so may indicate larger impact on decision making. Also it is associated with greater exposure of the CFO, therefore his moves are more carefully observed.

The fourth and the last component of the CFO index is the presence of his external directorships in listed companies[5]. The CFO's holding of external directorships presents his greater career independence of CEO, as it creates additional opportunities for promotion (Fama & Jensen, 1983; Jian & Lee, 2011; Masulis & Mobbs, 2011). Also it increases the value of reputation for

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[5] In this paper external directorships are not classified in any other way than directorship in a listed firm, i.e. there is no difference between non-executive and executive directorship. Hence, this may be an interesting direction for further research.

the CFO as he is exposed to more firms. As a result it creates an additional incentive to act in the best interest of shareholders. A CFO with external directorship also has greater impact on the CEO, as being reputable he is likely to be promoted within the firm. Therefore, the generated risk of replacement negatively affects CEO's entrenchment.

In conclusion, a high CFO index is expected to impact leverage in a more positive way than CEO's board capture, especially if BC reaches a high level as at this point the CEO may try to enforce the entrenched behaviour. When the power of the CEO's influence is too high, the CFO to keep a good reputation needs to create constraints to optimise the CEO's behaviour. In addition, the high level of the CFO index represents a presence of an independent executive aligned with shareholders. Hence, it is associated with optimal financial policies (including leverage), and information asymmetry is improved by the quality of the financial information reported to the board. Therefore it should be desirable in the governance structure.

H3. CFO Index is positively associated with leverage, when level of BC is high.

2.4. Effectiveness of regulating CEO's board capture by independent boards and CFO in times of financial crisis

As in a period of financial crisis the reaction to change needs to be prompt, the monitoring function of boards of directors may fail because of low frequency of meetings and the consequent increase in information assymetry.

Subsequently, the independence of the board (measured by share of non-executive directors) becomes less relevant in determining leverage (Monks, 2008). Instead, what becomes more important is the executive part of the board, which consists of executives that have a vital knowledge of company's insights and who decide on financial policies in these unstable circumstances (Acharya, et al., 2011; Graham, et al., 2010; Jian & Lee, 2011; Landier, et al., 2006; Masulis & Mobbs, 2011; Wang, et al., 2011). Hence it is expected that the CFO, being closer to daily operations of a company, is able to monitor the CEO's power more efficiently than the board of directors (and especially more than its non-executive part). Therefore in this paper it is argued that in a period of financial crisis, the impact of the independent board is reduced and the influence of the CFO gains in significance, not only in regulating the power of the CEO but also in determining leverage.

H4. The direct impact of the independent board on leverage becomes less significant in a period of financial crisis

H5. The indirect impact of the independent board through interaction with the CEO) on leverage is less significant in a period of financial crisis.

H6. The significance of CFO's direct influence on leverage increases in a period of financial crisis.

H7. The significance of CFO's monitoring of CEO (CFO indirect impact on leverage) increases in a period of financial crisis.

3. Sample selection and data description

3.1. Dataset

For the empirical analysis a sample is used that comprises 2279 firm-year observations on 330 firms listed on the London Stock Exchange over the period from year 2000 to 2009. Part of the empirical analysis is exploring the data with division for three generated sub-periods. Sub-periods accumulate data in the following manner: period 1 (normal period) include the years from 2000 until 2004; period 2 (pre-crisis period) contains data from 2005 until 2006; period 3 (crisis period) includes data from the remaining years, i.e. 2007-2009. Accounting and market variables are obtained from DATASTREAM. Specifically DATASTREAM is used to collect long term debt, earnings before interest and taxation (EBIT), total assets, net cash flow from operating activities, market value of equity, property plant and equipment expenses, number of shares outstanding and industry classification.

Information on CEO and CFO ownership and board characteristics is obtained manually from Corporate Register[6], Thomson One Banker, and BoardEx. In particular these sources are used to extract the following information: CEO and CFO tenure, age, and ownership; CFO's number of external directorships; number of executive and non-executive directors on a board. Definitions of all variables used in the analysis together with specified data sources are presented on Table 1.

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[6] As the Corporate Register is issued on a quarterly basis the December issue of each year is used as annual data. Also Thomson One Banker provides ownership data in quartiles; hence if data was missing in the Corporate Register, the 4th quartile of the year from Thomson One is used to complete the record.

Several screening criteria were applied to the data before carrying out the empirical analysis. Firstly all firms from the financial sector were excluded because of their regulatory conditions and difference from corporations' policies and financial ratios. Secondly the dataset was cleared from outliers (that lie outside the 1st and 99th percentile). Finally, to allow for more efficient analysis of unbalanced panel, only those corporations that had a minimum of four uninterrupted years of observations were kept in the dataset.

Table 1 Definitions of variables
Worldscope (WS) codes of selected data from DATASTREAM are presented in Appendix 1. (*) indicates availability of the same kind of variable for CFO.

Variable name	Definition	Source
LTD	ratio of long term debt to total assets	Datastream
TDA	ratio of total debt to total assets	Datastream
TDM	book value of total debt to the sum of book value of total assets and the market value of equity	Datastream
Profitability EBIT	ratio of earnings before interest and tax (EBIT) to total assets;	Datastream
MKTB	ratio of (total assets - book value of equity + market value of equity) divided by total assets;	Datastream, Thomson Financial
Size	logarithm of total assets;	Datastream
Tangibility	ratio of property plant and equipment to total assets;	Datastream
CEO Age*	numeric variable expressing age of an executive adjusted by year;	Corporate Register, Thomson One Banker
CEO Tenure*	numeric variable which express number of years while CEO keeps the title in an analysed company. Variable is estimated on the basis of two variables, i.e. CEO tenure year (year of an appointment to CEO position) and Year (time variable);	Corporate Register, Thomson One Banker
CEO OS*	number of ordinary shares owned by CEO divided by number of shares outstanding;	Thomson One Banker
CEO past performance*	operating performance from previous year, measured by ratio of operating cash flow and total assets. Ratio takes value of 0 if it does not correspond to current CEO's tenure;	Datastream

Variable name	Definition	Source
CFO Older	dummy variable which takes value of 1 if CFO is older than CEO, and 0 otherwise;	Corporate Register,
CFO longer tenure	dummy variable which takes value of 1 if CFO has longer tenure than CEO, and 0 otherwise;	Corporate Register,
CFO larger OS	dummy variable which takes value of 1 if CFO has larger ownership than CEO, and 0 otherwise;	Corporate Register,
CFO NF1	dummy variable which takes value of 1 if NF !=0 and 0 if NF=0;	Corporate Register, Thomson One Banker
NED	percentage share of non-executive directors on board;	Corporate Register

3.2. Descriptive statistics

Table 2 presents detailed descriptive statistics on the full sample for variables used in this analysis. Statistics on financial data are in line with those presented in the recent studies conducted on UK data (Florackis, 2008; Florackis & Ozkan, 2009; Lemmon, Roberts, & Zender, 2008; Ozkan, 2011).

It is observed that the average long-term debt ratio that proxies for leverage is 12.9%. Firms' profitability is 6% and performance is 9%. Average tangibility ratio equals to 26%. Proxy of growth opportunities (MKTB) has a mean value of 2.18. As for corporate governance variables on average 53% of the board is made up of non-executive directors and there are 7 directors in total. Descriptive statistics on CEO and CFO characteristics reveal significant differences between these two directors. High values of standard deviations of all included managerial characteristics show that there are numerous combinations of CEOs and CFO among firms. Hence, introductory results presented in Table 2 designate the direction of this study, which in a way

explores interaction between CEO and CFO. The differences are indicated by mean values of the complete sample. On average CEO is 4 years older than CFO and also has longer tenure (CEO's tenure = 5.96; CFO's tenure= 5.44). Differences are also visible in ownerships held by them. Specifically CEOs hold 4.84% of shares outstanding, which is almost ten times larger equity ownership than that of CFOs, who hold on average 0.59% of shares outstanding. External directorships are held by 27% of CFOs in the analysed dataset.

By sorting firms within each sub-period (i.e. 2000/2004, 2005/2006, 2007/2009) it is possible to control for cross-period differences in the capital structure and its determinants, as it is summarised in Table 3. So, the level of leverage measured by all three proxies rises (LTD from 12.7% in period 1 to 13.4% in period 3; TDA from 17.5% to 18.3%, and TDM from 17.3% to 18.2%). Changes are also visible among controlling financial determinants, where for instance level of profitability falls from 7.3% in the pre-crisis period to 6.7% in the crisis. Level of growth opportunities also falls from 2.445 mean value prior to the crisis to 1.941 in the crisis. The analysis of changes between personal characteristics of CEO and CFO will be more interpretable once accumulated into indexes in section 4.1

Table 2 Descriptive statistics

This table presents the descriptive statistics (count (N), mean, median (p50), standard deviation (sd)) of the total sample used in this analysis. *'CEO/CFO Age'* is a numeric variable counting years of CEO from the year of birth. *'CEO/CFO Tenure'* is a numeric variable that counts years of CEO/CFO in the analysed firm. *'CEO/CFO OS'* is ownership of CEO/CFO presented as a percentage of shares outstanding. '*CEO past performance'* is a ratio of operating cash flow to total assets lagged by one year (t-1). *'CFO NF1'* is a dummy variable that takes the value of 1 if CFO has at least one external directorship and zero otherwise. 'CFO Older than CEO' is a dummy variable that takes the value of 1, if CFO is older than CEO. '*CFO longer tenure than CEO'* is a dummy variable that takes the value of one if CFO's tenure is longer than CEO's. *'CFO larger OS than CEO'* is a dummy variable that takes value of one if CFO has larger ownership than CFO and zero otherwise. *'EX'* represents percentage share of board of directors composed of executive directors. *'NED'* represents percentage share of board of directors that comprise non-executive directors. *'Board Size'* is a numeric variable that describes number of directors on board. *'LTD'* is a proxy for leverage which is estimated as ratio of long-term debt to total assets. '*TDA*' is ratio of total debt to total assets. '*TDM' is* book value of total debt to the sum of book value of total assets and the market value of equity *'Profitability'* is the ratio of earnings before interest and tax (EBIT) to total assets. *'MKTB'* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *'Size'* is measured by logarithm of total assets in 2000 prices. *'Tangibility'* is the ratio of property plant and equipment to total assets

Variable	N	Mean	p50	Max	min	SD
CEO Age	2279	50.165	50	69	20	6.817
CEO Tenure	2279	5.959	4	40	0	6.171
CEO OS	2279	0.048	0.004	0.844	0.000	0.107
CEO past performance	2279	0.071	0.073	0.596	-1.563	0.119
CFO Age	2279	46.982	47	70	28	6.867
CFO Tenure	2279	5.439	4	36	0	5.453
CFO OS	2279	0.006	0.001	0.817	0.000	0.026
CFO NF1	2279	0.266	0	1	0	0.442
CFO Older than CEO	2279	0.328	0	1	0	0.470
CFO longer tenure than CEO	2279	0.534	1	1	0	0.499
CFO larger OS than CEO	2279	0.163	0	1	0	0.370
EX	2279	0.470	0.500	0.857	0.118	0.145
NED	2279	0.530	0.500	0.882	0.143	0.145
Board Size	2279	7.473	7	17	3	2.330
LTD	2279	0.129	0.084	0.919	0.000	0.146
TDA	2279	0.177	0.155	0.964	0.000	0.161
TDM	2239	0.176	0.155	0.794	0.000	0.159
Profitability	2279	0.066	0.079	0.447	-0.586	0.123
MKTB	2279	2.183	1.830	21.468	0.332	1.256
Size	2279	11.738	11.615	16.853	6.494	2.020
Tangibility	2279	0.256	0.204	0.914	0.001	0.222

Table 3 Descriptive statistics by sub-periods

Data is arranged in three sub-subsamples: 2000-2004 period, 2005-2006 pre-crisis period and 2007-2009 crisis period. The following descriptive statistics are presented: count (N), mean, median (p50), standard deviation (sd). *'CEO/CFO Age'* is a numeric variable counting years of CEO from the year of birth. *'CEO/CFO Tenure'* is a numeric variable that counts years of CEO/CFO in the analysed firm. *'CEO/CFO OS'* is ownership of CEO/CFO presented as a percentage of shares outstanding. *'CEO past performance'* is a ratio of operating cash flow to total assets lagged by one year (t-1). *'CFO NF1'* is a dummy variable that takes the value of 1 if CFO has at least one external directorship and zero otherwise. *'CFO Older than CEO'* is a dummy variable that takes the value of 1, if CFO is older than CEO. *'CFO longer tenure than CEO'* is a dummy variable that takes the value of one if CFO's tenure is longer than CEO's. *'CFO larger OS than CEO'* is a dummy variable that takes the value of one if CFO has larger ownership than CFO and zero otherwise. *'EX'* represents percentage share of board of directors composed of executive directors. *'NED'* represents percentage share of board of directors composed of non-executive directors. *'Board Size'* is a numeric variable that describes number of directors on board. *'LTD'* is a proxy for leverage which is estimated as ratio of long-term debt to total assets. *'TDA'* is the ratio of total debt to total assets. *'TDM' is a* book value of total debt to the sum of book value of total assets and the market value of equity. *'Profitability'* is the ratio of earnings before interest and tax (EBIT) to total assets. *'MKTB'* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *'Size'* is measured by logarithm of total assets in 2000 prices. *'Tangibility'* is the ratio of property plant and equipment to total assets.

Period		2000/2004			2005/2006			2007/2009	
Statistics	N	mean(SD)	p50	N	mean(SD)	p50	N	mean(SD)	p50
CEO Age	797	49.701(6.711)	50	614	50.176(7.051)	50	868	50.583(6.725)	51
CEO Tenure	797	5.814(6.202)	4	614	5.622(5.939)	4	868	6.331(6.290)	4
CEO OS	797	0.049(0.108)	0.005	614	0.051(0.110)	0.005	868	0.046(0.103)	0.003
CEO past performance	797	0.071(0.135)	0	614	0.063(0.118)	0	868	0.076(0.103)	0
CFO Age	797	46.189(6.933)	46	614	46.969(7.028)	46	868	47.72(6.611)	47
CFO Tenure	797	5.279(5.564)	3	614	5.270(5.346)	4	868	5.706(5.421)	4
CFO OS	797	0.004(0.013)	0.001	614	0.008(0.041)	0.001	868	0.006(0.020)	0.001
CFO NF1	797	0.240(0.427)	0	614	0.270(0.445)	0	868	0.288(0.453)	0
CFO Older than CEO	797	0.315(0.465)	0	614	0.334(0.472)	0	868	0.335(0.472)	0
CFO longer tenure than CEO	797	0.527(0.500)	1	614	0.564(0.496)	1	868	0.518(0.500)	1
CFO larger OS than CEO	797	0.152(0.359)	0	614	0.143(0.351)	0	868	0.188(0.391)	0
EX	797	0.500(0.145)	1	614	0.480(0.135)	1	868	0.435(0.144)	0
NED	797	0.500(0.145)	1	614	0.520(0.135)	1	868	0.565(0.144)	1
Board Size	797	7.516(2.397)	7	614	7.220(2.179)	7	868	7.612(2.359)	7
LTD	797	0.127(0.134)	0.092	614	0.125(0.151)	0.073	868	0.134(0.154)	0.085
TDA	797	0.175(0.149)	0.16	614	0.172(0.166)	0.142	868	0.183(0.168)	0.159
Profitability	797	0.060(0.125)	0.074	614	0.073(0.130)	0.089	868	0.067(0.115)	0.077
MKTB	797	2.245(1.524)	1.824	614	2.445(1.270)	2.091	868	1.941(0.872)	1.692
Size	797	11.697(1.970)	11.629	614	11.587(2.041)	11.383	868	11.882(2.043)	11.811
Tangibility	797	0.295(0.227)	0.257	614	0.242(0.221)	0.175	868	0.231(0.213)	0.172

4. Empirical analysis

4.1. Principal Component Analysis

The crux of the research is to identify influence of the board capture on the capital structure in presence of the strong CFO. Simultaneous incorporation of separate CEO and CFO characteristics that would determine powers of CEO and CFO to the cross-sectional regression is not an efficient estimation. It not only introduces many dimensions to the interpretation of results, but also raises multicollinearity problem. To avoid these issues two indexes are constructed that proxy for CEO's board capture (BC) and CFO's power (CFO Index) using Principal Component Analysis (Jolliffe, 2002). Principal Component Analysis (PCA) has been used in similar contexts by Florackis (2008), Florackis & Ozkan (2009), and Masulis & Mobbs (2011). It is a factor analysis that is performed on the correlation matrix of variables. It seeks a linear combination of components by applying weights to each of them. The procedure firstly extracts a combination with the maximum variance, which results in the first principal component. In this paper the first principal component is taken as an index in both instances (creation of BC and CFO

Index) as it meets the Kraiser criterion[7] and is indicated by Humphrey-Ilgen

parallel analysis[8] .

Table 3 and Table 4 present correlations of variables used in both indexes.

Table 5 and Table 6 present loadings of variables to the indexes. All of the

components contribute to the indexes according to the hypotheses

presented in section 2. Thus, CEO's tenure, ownership and performance

impact BC positively. CFO Index is positively influenced by CFO's age, tenure,

ownership and external directorships.

Table 3 Correlation table of BC components

'CEO Tenure' is a numeric variable that counts years of CEO in the analysed firm. *'CEO OS'* is ownership of CEO presented as a percentage of shares outstanding. *'CEO past performance'* is the ratio of operating cash flow to total assets lagged by one year (t-1).

	log(CEO Tenure)	CEO OS	CEO Past Performance
Log (CEO Tenure)	1		
CEO OS	0.140	1	
CEO Past Performance	0.194	-0.013	1

Table 4 Correlation table of CFO Index components

'CFO NF1' is a dummy variable that takes the value of 1 if CFO has at least one external directorship and zero otherwise. 'CFO Older than CEO' is a dummy variable that takes the value of 1, if CFO is older than CEO. 'CFO longer tenure than CEO' is a dummy variable that takes the value of one if CFO's tenure is longer than CEO's. 'CFO larger OS than CEO' is a dummy variable that takes the value of one if CFO has larger ownership than CFO and zero otherwise.

	CFO NF1	CFO Older	CFO longer Tenure*	CFO larger OS*
CFO NF1	1			
CFO Older	0.061	1		
CFO Longer Tenure*	0.042	0.140	1	
CFO Larger OS*	-0.006	0.152	0.232	1

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[7] *Kaiser criterion* (Guttman, 1954; Kaiser, 1960) is a common rule of thumb for dropping unimportant components in the principal component analysis. It suggests dropping components for which Eigen values are smaller than 1.0. However as this method usually overestimates the number of factors (Lance, Butts, & Michels, 2006) additional analysis of Humphrey and Ilgen were performed.

[8] Humphrey-Ilgen parallel analysis (Lance, et al., 2006) was conducted in STATA 11.0. It plots a graph for random and actual solutions. Number of factors which should be extracted is indicated by intersection of two lines. Number of factors is plotted on the x axis. Cumulative eigen values are plotted on the y axis.

Table 5 Board Capture loadings. PCA Index

'CEO Tenure' is a numeric variable that counts years of CEO in the analysed firm. *'CEO OS'* is ownership of CEO presented as a percentage of shares outstanding. *'CEO past performance'* is a ratio of operating cash flow to total assets lagged by one year (t-1).

	Prediction	Loading
Ln(CEO Tenure)	+	0.716
CEO OS	+	0.399
CEO past OCF	+	0.573

Table 6 CFO Power loadings. PCA Index

CFO NF1' is a dummy variable that takes the value of 1 if CFO has at least one external directorship and zero otherwise. *'CFO Older than CEO'* is a dummy variable that takes the value of 1, if CFO is older than CEO. *'CFO longer tenure than CEO*' is a dummy variable that takes the value of one if CFO's tenure is longer than CEO's. *'CFO larger OS than CEO'* is a dummy variable that takes the value of one if CFO has larger ownership than CFO and zero otherwise.

	Prediction	Loading
CFO NF1	+	0.148
CFO Older	+	0.510
CFO longer tenure	+	0.600
CFO larger OS	+	0.599

Table 7 Descriptive statistics of BC and CFO Index.

	Sample	N	mean	p50	Min	Max	Sd
BC	**Total**	2279	-3.18E-10	0.020	-7.909	4.248	1.111
	2000/2004	797	-0.036	0.013	-7.909	4.248	1.186
	2005/2006	614	-0.072	-0.065	-3.691	3.869	1.100
	2007/2009	868	0.084	0.091	-3.373	3.525	1.040
CFO Index	**Total**	2279	3.06E-09	-0.148	-1.351	2.891	1.166
	2000/2004	797	-0.049	-0.148	-1.351	2.891	1.137
	2005/2006	614	0.012	-0.148	-1.351	2.891	1.140
	2007/2009	868	0.037	-0.148	-1.351	2.891	1.210

As a result two indexes are created. Their description is provided on Table 7. In addition Table 9 presents introductory statistics for hypotheses regarding behaviour of CEO when his board capture is high, and CFO when he dominates CEO. Sub-samples of BC and CFO index are created on the basis of the median value. The above median group represents a high level of an index, and the below median group – low level. The cross tabulation provide preliminary evidence consistent with the main research hypothesis. Explicitly the increase of leverage in crisis and post crisis periods is higher in a group of firms

with a lower level of BC in comparison to firms with a higher BC. In the group with the lower level of the BC, LTD falls before the crisis by 5.46% and rises during the crisis by 10.81%. In the group above BC's median, changes are smaller, i.e. in the pre-crisis period LTD rises only by 3.10% and in the crisis rises further by 4.01%. In the sub-sample with lower CFO Index, the level of leverage falls before the crisis by -6.66% and rises in the crisis by 8.08%. The sample with a high level of leverage indicates positive changes between the analysed periods, namely 5.32% increase pre-crisis and 4.71% in the crisis.

Table 8 Percentage changes of key financial variables with respect to the previous sub-period

This table presents percentage changes of key variables' means across following periods: p1: 2000-2004; p2: 2005-2006; p3: 2007-2009. Changes are presented on the following groups of firms: full sample, lower than median of BC (BC Low), higher and equal to median of BC (BC High), lower than median of CFO Index (CFO Index low), higher and equal to median of CFO Index (CFO Index high). Δ symbolises a percentage change of value. *'LTD'* is a proxy for leverage which is estimated as ratio of long-term debt to total assets. *'TDA'* is ratio of total debt to total assets. *'Profitability'* is a ratio of earnings before interest and tax (EBIT) to total assets. *'MKTB'* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *'Size'* is measured by logarithm of total assets in 2000 prices. *'Tangibility'* is the ratio of property plant and equipment to total assets.

Board Size		LTD	TDA	Profitability	MKTB	Size	Tangibility
FULL SAMPLE	Δ from p1 to p2	-1.46%	-1.62%	20.58%	8.94%	-0.93%	-17.83%
	Δ from p2 to p3	7.04%	6.24%	-7.16%	-20.61%	2.54%	-4.61%
BC low	Δ from p1 to p2	-5.46%	-3.01%	28.14%	9.29%	-1.65%	-22.20%
	Δ from p2 to p3	10.81%	10.60%	48.22%	-21.81%	3.30%	-4.39%
BC high	Δ from p1 to p2	3.10%	-0.33%	22.42%	8.90%	-0.17%	-12.80%
	Δ from p2 to p3	4.01%	3.08%	-27.82%	-20.26%	1.86%	-5.46%
CFO Index low	Δ from p1 to p2	-6.66%	-6.24%	15.47%	10.52%	-1.45%	-16.51%
	Δ from p2 to p3	8.08%	8.72%	-10.06%	-22.20%	3.10%	-3.23%
CFO Index high	Δ from p1 to p2	5.32%	4.49%	30.10%	6.96%	-0.55%	-20.64%
	Δ from p2 to p3	4.71%	2.44%	-3.64%	-17.99%	1.55%	-6.84%

4.2. Univariate Analysis

Univariate analysis explores differences between mean values of variables across four sub-groups, which in the first part (Panel A) constitute quartiles of leverage, and in the second part (Panel B) quartiles of CEO's board capture. Quartiles are presented in ascending order in both panels. For instance, in panel A, Q1 includes firms with the lowest level of leverage; Q4 includes firms with the highest level of leverage. The last column presents t values of a mean comparison test done to compare the first and the fourth quartile of leverage.

Table 9 presents some valuable preliminary results consistent with the main hypothesis, i.e. it indicates that size, tangibility of assets, and percentage of non-executive directors on board, are positively correlated with leverage. Consequently, the negative correlation is observed between market to book ratio, board capture and leverage. Interestingly, there is no significant association between CFO Index and leverage; however there is a significant and negative relation between the first and the fourth quartile of the board capture in terms of CFO Index, indicating that in general, with the growth of the CEO's dominance on the board, the power of the CFO decreases. This result confirms the board capture hypothesis, proving that degree of influence on the board rises with BC. Results regarding individual characteristics influencing leverage are in line with predictions except CEO's tenure, which is expected to have a positive association with leverage. The alternative hypothesis may indicate that close to retirement, the CEO loses

incentives to act in an entrenched way as he has established a retirement

plan (Frank & Goyal, 2007). More results about individual characteristics

incorporated to in the leverage models are presented in Appendix 2.

Table 9 Univariate analysis

Table displays the means of variables used in the analysis for the first and the fourth quartile of leverage and board capture respectively. *, **,*** indicate statistical significance at 10%, 5%, and 1% levels, respectively, based on a two-tailed t-test of the difference in means. *'CEO Tenure'* is a numeric variable that counts years of CEO in the analysed firm. *'CEO'* is ownership of CEO presented as a percentage of shares outstanding. *'CEO past performance'* is the ratio of operating cash flow to total assets lagged by one year (t-1). *'CFO NF1'* is a dummy variable that takes the value of 1 if CFO has at least one external directorship and zero otherwise. *'CFO Older than CEO'* is a dummy variable that takes the value of 1, if CFO is older than CEO. *'CFO longer tenure than CEO'* is a dummy variable that takes the value of one if CFO's tenure is longer than CEO's. *'CFO larger OS than CEO'* is a dummy variable that takes the value of one if CFO has larger ownership than CFO and zero otherwise. *'NED'* represents percentage share of board of directors composed of non-executive directors. *'LTD'* is a proxy for leverage which is estimated as ratio of long-term debt to total assets. *'Profitability'* is the ratio of earnings before interest and tax (EBIT) to total assets. *'MKTB'* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *'Size'* is measured by logarithm of total assets in 2000 prices. *'Tangibility'* is the ratio of property plant and equipment to total assets. *BC* is the board capture index which estimation is described in section 4.1. CFO Index is an index that describes CFO's power in comparison to CFO (its estimation is described in section 4.1).

Panel A

LTD_Q	Q1	Q2	Q3	Q4		t-test	
Size	10.50	11.13	12.40	13.28		-30.14	***
Tangibility	0.16	0.22	0.28	0.37	-	16.54	***
MKTB	2.67	2.27	1.94	1.85		10.69	***
Profitability	0.07	0.06	0.07	0.07		0.29	
NED	0.47	0.50	0.55	0.60	-	15.54	***
CEO Tenure	6.85	5.96	5.68	5.34		4.12	***
CEO OS	0.07	0.07	0.03	0.02		7.60	***
CEO past performance	0.06	0.07	0.08	0.08		-1.91	*
CFO longer tenure	0.52	0.56	0.52	0.53		2.52	**
CFO older	0.36	0.34	0.33	0.29	-	0.33	
CFO larger OS	0.19	0.15	0.12	0.20	-	0.76	
CFO NF1	0.20	0.26	0.29	0.32	-	4.65	***
BC	0.11	0.06	-0.05	-0.11		3.31	***
CFO Index	0.03	0.02	-0.08	0.04	-	0.70	

Panel B

BC_Q	Q1	Q2	Q3	Q4	t-test	
CFO Index	0.62	0.20	-0.17	-0.65	21.04	***
CFO longer tenure	0.83	0.63	0.46	0.22	26.25	***
CFO older	0.39	0.35	0.32	0.26	4.76	***
CFO larger OS	0.28	0.19	0.12	0.06	10.63	***
CFO NF1	0.29	0.29	0.27	0.22	2.82	***

4.3.   OLS Regression Analysis

Relying on the vast body of literature on the capital structure (Chava & Purnanandam, 2010; Frank & Goyal, 2009; Frank & Goyal, 2009; Rajan & Zingales, 1995; Titman & Wessels, 1988) the following control variables are chosen for all models firm's size, tangibility (assets available for collateral), profitability and market to book ratio (proxy for growth). Definitions of all control variables are presented in Table 1. The dependent variable for all analysis regressions is leverage measured as ratio of long-term debt to total assets. To control for industry and time effects, dummy variables are used. All significance levels are computed using robust standard errors. Table 11 provides results of models estimated using pooled ordinary least –squares (OLS) estimator. All variables included in the first model are in the same time t. In models 2 and 3 control variables are included in time t-1 and the board capture and dependent variable - leverage at time t. The estimated coefficients are in line with those in previous literature (Chava & Purnanandam, 2010; Florackis & Ozkan, 2009; Murray Z. Frank & Goyal, 2009; Rajan & Zingales, 1995).The results of all models indicate that impact of size and tangibility on leverage is positive and significant at 1% level impact, suggesting that larger firms with more tangible assets, that easily can be treated as collateral, increase reputation and trust in a company. The impact of market-to-book ratio is negative and significant at the 1 % level, which is in line with agency theory (high growth firms choose lower leverage, not to overlook investment opportunities). Additionally profitability has some negative impact but only in models 1 and 4, suggesting that firms prefer

retained earnings than leverage to finance their investments (pecking order theory). Last but not least, the board capture (BC) influences leverage negatively and significantly that is in line with the first hypothesis. The result suggests that as the CEO gains power on a board he naturally induces lower level of leverage. Also it may indicate that too excessive power of CEO may be perceived as the bad practice which would result in higher costs of borrowing or even a limitation to borrowing ability; therefore BC should be negatively associated with leverage.

Table 11 introduces impacts of presence of strong CFOs on the basis of subsamples generated on the basis of components used for creation of the CFO Index. Models 1 and 2 compare samples where CFOs have (model 1) or do not have external directorship (model 2); models 3 and 4 compare samples where CFO has longer tenure than CEO (model 3) or not (model 4); in models 5 and 6 compare sub-samples where CFO has larger ownership than CEO (model 5) and the other way round (model 6); and finally in models 7 and 8 compare a sample, where CFO is older than CEO (model7) with a sample where CEO is older than CFO (model 8). All eight models presented in Table 11 confirm hypotheses about the CFO's dominance features, indicating that in firms where the CFO has external directorship, longer tenure, larger ownership, or is older than the CEO, impact of BC on leverage is not significant, although still negative.

Table 10 Coefficients of OLS analysis based on the full sample (2000-2009).
Models 1 and 3 include all dependent and independent variables in time t. Models 2 and 4 include lagged by one year (t-1) size, tangibility, MKTB and profitability and BC and leverage variables at time t. All models include industry and time dummies. Dependent variable is

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leverage (LTD=long-term debt/total assets). Profitability is a ratio of earnings before interest and tax (EBIT) to total assets. MKTB [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. Size is measured by logarithm of total assets in 2000 prices. Tangibility is the ratio of property plant and equipment to total assets. Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1% ,5% and 10% level, respectively.

	OLS (1)	OLS-Lagged (2)	OLS (3)	OLS-Lagged (4)
Size	0.032***	0.031***	0.031***	0.031***
	(0.002)	(0.002)	(0.002)	(0.002)
Tangibility	0.167***	0.174***	0.171***	0.178***
	(0.019)	(0.021)	(0.019)	(0.021)
MKTB	-0.009***	-0.007***	-0.009***	-0.007***
	(0.002)	(0.002)	(0.002)	(0.002)
Profitability	-0.060***	-0.014	-0.042*	0.006
	(0.022)	(0.022)	(0.023)	(0.023)
BC	0.032***	0.031***	0.031***	0.031***
	(0.002)	(0.002)	(0.002)	(0.002)
_cons	0.167***	0.174***	0.171***	0.178***
	(0.019)	(0.021)	(0.019)	(0.021)
Industry dummies	X	X	X	X
Time dummies	X	X	X	X
N	2279	1947	2279	1947
R^2	0.457	0.476	0.459	0.478

In the next step the CFO Index, which consists of the four CFO's characteristics tested in Table 11, is introduced to models. The index is created according to Principal Component Analysis discussed in section 4.1. Table 12 presents OLS regressions that introduce the CFO Index to the model. Models 2 and 3 present a negative impact of the CFO Index on leverage on the full sample. The influence of the CFO Index is negative, however, economically less significant than the impact of BC. That result suggests that in the total sample, where on average CFO is weaker than CEO, they both impact leverage in a negative way. These results confirm the traditional agency theory of Jensen and Meckling (1976). Models 4 and 5 introduce two sub-samples of data according to the value of board capture. Model 4 is based on the lowest quartile of BC. In this sub-sample impact of CFO Index is negative and insignificant. In the 5th model, which is based on the 4th quartile

of board capture, the impact of CFO Index is positive (0.014**) and significant at the 5 % level. This result confirms the hypothesis H3 i.e. CFO Index is positively associated with leverage, when level of BC is high.

Table 11 Coefficients of OLS regressions on sub-samples created on the basis of CFO's characteristics

Models include control variables (size, tangibility, MKTB, profitability) at time t-1 and BC and leverage at time t. Models 3-8 are based on subsamples defined on a basis of comparison of following characteristics of CEO and CFO: tenure, ownership and age. Sample was divided on the basis of characteristics' median value. Model 1 and 2 compare two subsamples where in model 1 CFOs have external directorships and in model 2 CFOs do not have any external directorships. Dependent variable in all models is leverage (LTD=long-term debt/total assets). Profitability is the ratio of earnings before interest and tax (EBIT) to total assets. MKTB [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. Size is measured by logarithm of total assets in 2000 prices. Tangibility is the ratio of property plant and equipment to total assets. Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1%, 5% and 10% level, respectively. Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1%, 5% and 10% level, respectively.

	CFO at least 1 external directorship (1)	CFO none external directorships (2)	CFO longer tenure than CEO(3)	CFO shorter tenure than CEO(4)	CFO larger ownership than CEO(5)	CFO smaller ownership than CEO(6)	CFO older than CEO(7)	CFO younger than CEO(8)
Size	0.031***	0.034***	0.032***	0.028***	0.029***	0.030***	0.034***	0.030***
	(0.004)	(0.002)	(0.002)	(0.002)	(0.005)	(0.002)	(0.003)	(0.002)
Tangibility	0.222***	0.174***	0.211***	0.183***	0.405***	0.140***	0.212***	0.167***
	(0.063)	(0.023)	(0.027)	(0.035)	(0.067)	(0.022)	(0.033)	(0.027)
MKTB	-0.018**	-0.005**	0.002	-0.015***	-0.013	-0.008***	-0.007*	-0.007**
	(0.008)	(0.002)	(0.002)	(0.004)	(0.010)	(0.002)	(0.004)	(0.003)
Profitability	-0.036	0.020	0.034	-0.012	0.034	0.015	-0.009	0.025
	(0.062)	(0.029)	(0.036)	(0.038)	(0.093)	(0.025)	(0.055)	(0.030)
BC	0.008	-0.010***	-0.003	-0.023***	0.011	-0.010***	-0.001	-0.008**
	(0.007)	(0.003)	(0.005)	(0.006)	(0.009)	(0.003)	(0.005)	(0.003)
_cons	-0.295***	-0.300***	-0.329***	-0.197***	-0.236***	-0.257***	-0.328***	-0.248***
	(0.060)	(0.028)	(0.030)	(0.036)	(0.070)	(0.025)	(0.043)	(0.029)
Industry dummies	X	X	X	X	X	X	X	x
Time dummies	X	X	X	X	X	X	X	x
N	512	1435	1022	925	314	1633	634	1313
R^2	0.597	0.502	0.481	0.570	0.648	0.482	0.570	0.499

Table 12 OLS Regression Coefficients with CFO Index.

Models include control variables (size, tangibility, MKTB, profitability) at time t-1 and BC, CFO Index, and leverage at time t. Dependent variable in all models is leverage (LTD=long-term debt/total assets). Model 1 presents OLS regression with main four determinants of capital structure. Model 2 adds CFO Index to the model and model 3 adds board capture (BC). Models 4 and 5 are based on sub-samples created on the basis of the board capture quartiles. Model 4 is based on a sample with the lowest board capture (1st quartile). Model 5 is analysed on a sample with the highest board capture (4th quartile). Models 6 and 7 are based on sub-samples created on the basis of CFO Index's median value. Explicitly model 6 is based on a sub-sample with lower value of CFO Index (CFO Index <median) and model 7 is based on a sub-sample with higher value of CFO Index (CFO Index>=median).*Profitability* is a ratio of earnings before interest and tax (EBIT) to total assets. *MKTB* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *Size* is measured by logarithm of total assets in 2000 prices. *Tangibility* is the ratio of property plant and equipment to total assets. *BC* [Board Capture] and *CFO Index* are both derived after using principal component analysis presented in section 4.1. Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Size	0.031***	0.031***	0.030***	0.032***	0.038***	0.031***	0.036***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.002)	(0.003)
Tangibility	0.174***	0.174***	0.181***	0.133***	0.215***	0.123***	0.282***
	(0.021)	(0.021)	(0.021)	(0.048)	(0.044)	(0.027)	(0.041)
MKTB	-0.007***	-0.007***	-0.006***	-0.001	-0.007**	-0.011***	-0.002
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)	(0.003)
Profitability	-0.014	-0.014	0.016	0.000	-0.157***	-0.005	-0.008
	(0.022)	(0.022)	(0.025)	(0.047)	(0.054)	(0.029)	(0.043)
CFO Index		-0.001	-0.004*	-0.006	0.014**	0.001	-0.003
		(0.002)	(0.003)	(0.007)	(0.006)	(0.006)	(0.007)
BC			-0.010***				
			(0.003)				
_cons	-0.272***	-0.273***	-0.271***	-0.298***	-0.327***	-0.238***	-0.352***
	(0.023)	(0.023)	(0.023)	(0.071)	(0.046)	(0.030)	(0.046)
Industry dummies	X	X	X	X	X	X	x
Time dummies	X	X	X	X	X	X	x
N	1947	1947	1947	391	511	1173	774
R²	0.476	0.476	0.479	0.557	0.587	0.519	0.525

Finally models 6 and 7 present an alternative analysis where model 6 is based on a sub-sample with a lower level of CFO Index and model 7 on a sub-sample with a higher level of CFO Index. Models indicate that in the presence of a strong CFO (model 6) the impact of BC on leverage is not significant and positive, and negative and significant otherwise (model 7). High level of CFO Index indicates relatively low level of the CEO's power. Also in these circumstances the CFO has greater ability to impact leverage, and consequently does not allow the CEO to influence this decision. The results presented in Table 13 indicate that impact of the CFO Index on leverage is conditional on board capture. This specification is additionally captured by including an interaction term between the board capture and CFO index, which is presented in column 1 of Table 14. The interaction term has small but significant impact on the adjusted R2. The negative impact of BC on LTD rises by 0.007 per unit increase of CFO index. In other words a positive coefficient on the interaction term indicates that presence of a strong CFO can mitigate the effect of CEO's board capture on leverage.

Table 13 Coefficients of OLS regressions with interaction terms

The dependent variable in all four models is LTD. Models include control variables at time t-1 and BC, CFO Index, NED and interaction terms at time t. Profitability is the ratio of earnings before interest and tax (EBIT) to total assets. MKTB [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. Size is measured by logarithm of total assets in 2000 prices. Tangibility is the ratio of property plant and equipment to total assets. BC (Board Capture) and CFO Index are both derived after using principal component analysis presented in section 4.1. NED is percentage share of non-executive directors on the board of directors. 'BC*CFO' is an interaction term of CFO Index and Board Capture. 'BC*NED' is an interaction term of BC and NED. 'CFO*NED' is an interaction term of CFO Index and NED. Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)
Size	0.027***	0.027***	0.026***
	(0.002)	(0.002)	(0.002)
Tangibility	0.191***	0.189***	0.192***
	(0.021)	(0.021)	(0.021)
MKTB	-0.006***	-0.006***	-0.006***
	(0.002)	(0.002)	(0.002)
Profitability	0.008	0.013	0.014
	(0.025)	(0.025)	(0.025)
BC	-0.007**	-0.015*	-0.009***
	(0.003)	(0.008)	(0.003)
CFO Index	-0.004	-0.005*	-0.020**
	(0.003)	(0.003)	(0.009)
NED	0.101***	0.107***	0.109***
	(0.024)	(0.024)	(0.024)
BC*CFO	0.007***		
	(0.002)		
BC*NED		0.012	
		(0.017)	
CFO*NED			0.028*
			(0.016)
Industry dummies	X	X	X
Time dummies	X	X	X
_cons	-0.280***	-0.282***	-0.283***
	(0.022)	(0.023)	(0.023)
N	1947	1947	1947
R^2	0.489	0.486	0.487

In section 2.4 it is suggested that the corporate governance role of the CFO becomes even more relevant than traditionally independent boards (proxied by NED) in a period of the financial crisis. To study the effect of CFO Index and NED on the board capture in the various economic conditions, interaction terms between them are added to models, and analysis is performed on the data from the following periods: 2000-2004, 2005-2006, 2007-2009 (models are presented in Table 14). The results are consistent with hypotheses **Error! Reference source not found.**, **Error! Reference source not found.**, and **Error! Reference source not found.**; but do not confirm **Error! Reference source not found.**. And so, the direct impact of the independent boards on the leverage becomes less significant in a period of the financial crisis. NED's coefficients in model 3 and 6, which are based on the financial crisis period, are insignificant. In the remaining periods (models 1, 2, 4, 5) they are significant. Also, the indirect impact of the non-executive suite measured by the interaction term of BC and NED (BC* NED) is significant. The significance of the CFO's monitoring of the CEO measured by the interaction term between BC and CFO Index (BC*CFO) is positive and significant in the period of 2007-2009. Additionally, in Table 15 an alternative approach is presented. The sample is divided on the basis of median value of CFO Index. The above median group is presented in the last three columns of Table 14. This sub-sample includes firms, in which CFO Index is strong. Consequently, the influence of BC on leverage is not significant, and positive. On the other hand, in the sub-group that includes firms with weaker CFOs the

influence of the board capture on leverage is negative and significant in the period from 2005 until 2009.

Table 14 Coefficients of OLS regressions by sub-periods: 2000/2004, 2005/2006, 2007/2009.

Models include control variables at time t-1 and BC, CFO Index, NED and interaction terms at time t. Models 1-10 are based on various sub-periods i.e. model 1&4 are based on period 2000-2004; model 2&4 - period 2005/2006; model 3&6 – period 2007/2009 (crisis). Models 1-3 include '*BC*CFO'* which is an interaction term between board capture and CFO Index. Models 4-6 include '*BC*NED'* which is an interaction term between NED and board capture. Dependent variable in all four models is leverage (LTD=long-term debt/total assets). *Profitability* is the ratio of earnings before interest and tax (EBIT) to total assets. *MKTB* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *Size* is measured by logarithm of total assets in 2000 prices. *Tangibility* is the ratio of property plant and equipment to total assets. *BC* [Board Capture] and *CFO Index* are both derived after using principal component analysis presented in section 4.1. *NED* is percentage share, of non-executive directors on the board of directors. Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Period	2000/2004	2005/2006	2007/2009	2000/2004	2005/2006	2007/2009
Size	0.019***	0.025***	0.033***	0.019***	0.024***	0.033***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)
Tangibility	0.232***	0.162***	0.234***	0.231***	0.158***	0.233***
	(0.036)	(0.044)	(0.035)	(0.035)	(0.044)	(0.036)
MKTB	-0.003	-0.010**	-0.009**	-0.003	-0.010**	-0.009**
	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Profitability	-0.041	0.030	0.020	-0.041	0.039	0.025
	(0.050)	(0.049)	(0.041)	(0.051)	(0.047)	(0.040)
BC	-0.004	-0.008	-0.009*	-0.011	-0.045**	-0.011
	(0.006)	(0.007)	(0.005)	(0.016)	(0.018)	(0.012)
CFO Index	-0.003	-0.011**	0.001	-0.003	-0.011**	-0.000
	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)
NED	0.198***	0.139***	0.045	0.195***	0.140***	0.054
	(0.046)	(0.052)	(0.036)	(0.050)	(0.052)	(0.036)
BC *CFO	0.002	0.007	0.010***			
	(0.004)	(0.006)	(0.003)			
BC*NED				0.015	0.072*	0.002
				(0.039)	(0.037)	(0.024)
_cons	-0.249***	-0.255***	-0.315***	-0.247***	-0.258***	-0.322***
	(0.035)	(0.042)	(0.033)	(0.036)	(0.042)	(0.033)
Industry dummies	X	X	X	x	X	X
N	550	529	868	550	529	868
R^2	0.539	0.512	0.552	0.539	0.514	0.547

Table 15 Coefficients of OLS regressions by sub-periods: 2000/2004, 2005/2006, 2007/2009 and sub-groups based on CFO Index.

Models include control variables at time t-1 and BC, CFO Index, NED and interaction terms at time t. Models 1-10 are based on various sub-periods i.e. model 1&4 are based on period 2000-2004; model 2&4 - period 2005/2006; model 3&6 – period 2007/2009 (crisis). Models 1-3 are based on a sub-group of companies in which values of CFO Index are below the median. Models 4-6 are based on a sub-group of companies in which values of CFO Index are above the median. Dependent variable in all four models is leverage (LTD=long-term debt/total assets). *Profitability* is the ratio of earnings before interest and tax (EBIT) to total assets. *MKTB* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *Size* is measured by logarithm of total assets in 2000 prices. *Tangibility* is the ratio of property plant and equipment to total assets. *BC* [Board Capture] and *CFO Index* are both derived after using principal component analysis presented in section 4.1. . Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	CFO Index< median(CFO Index)			CFO Index>=median(CFO Index)		
Period	2004/2005	2006/2007	2008/2009	2004/2005	2006/2007	2008/2009
Size	0.032***	0.030***	0.033***	0.021**	0.034***	0.040***
	(0.004)	(0.004)	(0.004)	(0.009)	(0.007)	(0.004)
Tangibility	0.135***	0.125**	0.163***	0.432***	0.171*	0.410***
	(0.045)	(0.053)	(0.046)	(0.079)	(0.091)	(0.057)
L.MKTB	-0.007	-0.015***	-0.015**	0.000	-0.005	-0.000
	(0.005)	(0.005)	(0.007)	(0.003)	(0.014)	(0.008)
Profitability	-0.051	0.070	0.078	-0.060	-0.050	0.008
	(0.072)	(0.067)	(0.054)	(0.087)	(0.122)	(0.065)
BC	-0.001	-0.015*	-0.017**	-0.031*	0.005	0.003
	(0.007)	(0.008)	(0.007)	(0.018)	(0.014)	(0.008)
_cons	-0.262***	-0.226***	-0.255***	-0.272***	-0.303***	-0.431***
	(0.046)	(0.053)	(0.047)	(0.098)	(0.088)	(0.057)
Industry dummies	X	X	x	X	X	X
Time dummies	X	X	x	X	X	X
N	363	321	489	187	208	379
R^2	0.580	0.593	0.599	0.617	0.503	0.642

4.4. Robustness check

As a robustness check the major part of the analysis is repeated using alternative measures of leverage. Specifically instead of using only LTD, TDA is used, which is a ratio of total debt to total assets, and TDM which is ratio for market leverage. Still, it is believed that out of the three proxies (LTD, TDA, TDM) LTD is the most adequate measure of capital structure. To be precise, the limitation of TDM is that it is constructed on the basis of market values,

and managers are more likely to be focused on measures in book values as they are more important for bank loan agreements (Harvey, Lins, & Roper, 2004). The shortcoming of TDA is a failure to incorporate the fact that there are assets which are balanced by specific non-debt liabilities (Rajan & Zingales, 1995); for example TDA is negatively affected by gross value of trade credit.

In the analysis so far, control variables at time t-1 and the remaining variables at time t, were used. For robustness purposes, to reduce the extent of the endogeneity problem that arises from simultaneous determination; all independent variables are used at time t-1. Still this OLS approach controls for endogeneity due to reverse causality.

As Table 15 indicates, OLS estimates hold with prediction on LTD when alternative measures of leverage are used in models 2 and 3. The three columns presented confirm the core findings from the main part of this paper. Specifically, there is a negative and significant impact of board capture on leverage and interaction between this proxy and CFO Index is positive, indicating that presence of strong CFO reduces the impact of CEO on the capital structure. Table 17 extends the main model by division for shorter periods (2000/2004; 2005/2006; 2007/2009). Again we find a confirmation that as a good corporate governance mechanism, as discussed, the presence of a strong CFO gains in relevance in bad times such as the recent financial crisis (Schoar & Washington, 2011).

Table 16 Models with alternative measures of leverage

Dependent variable in model1 is LTD (long term debt to total assets). Dependent variable in model 2 is TDA (total debt to total assets). Dependent variable in model 3 is TDM (book value of total debt to the sum of book value of total assets and the market value of equity). All independent variables are used lagged by one year (t-1). *Profitability* is the ratio of earnings before interest and tax (EBIT) to total assets. *MKTB* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *Size* is measured by logarithm of total assets in 2000 prices. *Tangibility* is the ratio of property plant and equipment to total assets. *BC* [Board Capture] and *CFO Index* are both derived after using principal component analysis presented in section 4.1. *NED* is percentage share, of non-executive directors on the board of directors. Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)
	LTD	TDA	TDM
Size	0.027***	0.023***	0.023***
	(0.002)	(0.002)	(0.002)
Tangibility	0.191***	0.205***	0.205***
	(0.021)	(0.022)	(0.022)
MKTB	-0.006***	-0.013***	-0.013***
	(0.002)	(0.003)	(0.003)
Profitability	0.008	-0.030	-0.030
	(0.025)	(0.030)	(0.030)
NED	0.101***	0.153***	0.152***
	(0.024)	(0.027)	(0.027)
BC	-0.007**	-0.011***	-0.011***
	(0.003)	(0.004)	(0.004)
CFO Index	-0.004	-0.004	-0.004
	(0.003)	(0.003)	(0.003)
BC *CFO	0.007***	0.011***	0.011***
	(0.002)	(0.003)	(0.003)
_cons	-0.280***	-0.199***	-0.199***
	(0.022)	(0.026)	(0.026)
Industry dummies	X	X	X
Time dummies	X	X	X
N	1947	1947	1905
R^2	0.489	0.464	0.465

Table 17 Models with alternative measures of leverage for different periods.

Dependent variable in models 1-3 is LTD (long term debt to total assets). Dependent variable in models 4-6 is TDA (total debt to total assets). Dependent variable in models 7-9 is TDM (book value of total debt to the sum of book value of total assets and the market value of equity). All independent variables are used lagged by one year (t-1).

Profitability is the ratio of earnings before interest and tax (EBIT) to total assets. *MKTB* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *Size* is measured by logarithm of total assets in 2000 prices. *Tangibility* is the ratio of property plant and equipment to total assets. *BC* [Board Capture] and *CFO Index* are both derived after using principal component analysis presented in section 4.1.*BC*CFO* is an interaction term between BC and CFO index. Standard errors are presented in parentheses. ***, **, * indicate that coefficient is significant at 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Period	2000/2004	2005/2006	2007/2009	2000/2004	2005/2006	2007/2009	2000/2004	2005/2006	2007/2009
Y	LTD	LTD	LTD	TDA	TDA	TDA	TDM	TDM	TDM
Size	0.026***	0.029***	0.035***	0.028***	0.029***	0.031***	0.028***	0.029***	0.031***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)
Tangibility	0.208***	0.152***	0.230***	0.229***	0.171***	0.237***	0.229***	0.170***	0.237***
	(0.035)	(0.044)	(0.035)	(0.041)	(0.046)	(0.036)	(0.041)	(0.046)	(0.035)
MKTB	-0.004*	-0.009**	-0.009**	-0.007**	-0.013**	-0.019***	-0.007**	-0.013**	-0.019***
	(0.002)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)	(0.004)	(0.005)	(0.006)
Profitability	-0.039	0.023	0.023	-0.109*	-0.034	0.014	-0.109*	-0.034	0.014
	(0.051)	(0.048)	(0.041)	(0.064)	(0.055)	(0.047)	(0.064)	(0.055)	(0.047)
BC	-0.006	-0.010	-0.010**	-0.004	-0.015*	-0.015**	-0.004	-0.015*	-0.015**
	(0.006)	(0.007)	(0.005)	(0.008)	(0.008)	(0.006)	(0.008)	(0.008)	(0.006)
CFO Index	-0.002	-0.011**	0.002	-0.002	-0.008	-0.000	-0.002	-0.008	-0.000
	(0.005)	(0.005)	(0.004)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)
BC*CFO	0.005	0.008	0.010***	0.007	0.009	0.015***	0.007	0.009	0.015***
	(0.004)	(0.006)	(0.003)	(0.005)	(0.006)	(0.004)	(0.005)	(0.006)	(0.004)
_cons	-0.218***	-0.234***	-0.309***	-0.186***	-0.182***	-0.182***	-0.186***	-0.162***	-0.181***
	(0.035)	(0.042)	(0.034)	(0.040)	(0.049)	(0.038)	(0.040)	(0.050)	(0.038)
Year dummies	X	X	X	X	X	X	x	x	x
Industry dummies	X	X	X	X	X	X	x	x	x
N	550	529	868	550	529	868	550	529	868
R^2	0.516	0.502	0.551	0.500	0.481	0.508	0.500	0.481	0.508

5. Conclusion

The primary objective of this paper is to document the CEO's power of influence on the board of directors and its impact on leverage. In doing so the board capture index is established as a proxy for CEO's power using principal component analysis. Specifically CEO's tenure, ownership and past performance are combined to create the index. It is found that CEO's board capture is negatively associated with leverage, as together with increasing CEO's power on the board he pursues a leverage policy according to his preferences more easily. A powerful CEO normally prefers a lower level of leverage than shareholders, as a high level of debt in the capital structure generates additional constraints. The evidence is consistent with the agency theory (Jensen & Meckling, 1976). Also in this paper, the importance of spread of power between CEO and CFO is explored. A CFO Index is created that compares him to the CEO in terms of age, tenure and ownership and indicates CFO's independence by including a proxy for his external directorships. It is found that the presence of a strong chief financial officer limits CEO's board capture if the latter reaches a high level. Finally, using data from 330 firms listed on London Stock Exchange from the period of 2000-2009, the above mentioned issues are examined in the context of the recent financial crisis. It is found that the regulatory role of the CFO over the CEO gains in relevance in the period of crisis, whereas the traditional corporate governance mechanism of an independent board of directors loses importance. Taken as a whole, the results indicate that it is not desirable to have too powerful CEO, who primarily determines the level of leverage.

The results add to the literature that examines the influence of characteristics of the CEO on capital structure policies in firms they manage (Bertrand & Schoar, 2003; Malmendier et al, 2010; Malmendier & Tate, 2005) and provide additional insights into the presence of a strong CFO that modifies the CEO's influence. Hence, this paper contributes to the emerging body of literature that explores the executive suite (Acharya, et al., 2011; Masulis & Mobbs, 2011; Wang, et al., 2011) by providing empirical evidence that the spread of power between executive directors (CEO and CFO) has significant influence on corporate financial policies.

6. Appendixes

Appendix 1 Definitions and Data Codes of Variables Used in the Analysis.

No. Variable	Definition	Data Codes
1 LTD	Long term debt/TA	WC02003/WC02999
2 TDA	Total debt/TA	WC03255/WC02999
3 Profitability	EBIT/TA	
EBIT*		WC18191/WC02999
4 Profitability	EBITD/TA	
EBITD		WC18198/WC02999
5 Market- to –	(TA-Book value of equity+market value	
book*	of equity)/TA	(WC02999 -WC05476+WC08001)/ WC02999
6 Size*	Log (TA)	log(WC02999)
7 Liquidity	(TCA-TCL-CASH)/TA	(WC02201-WC03101-WC02003)/WC02999
8 Tangibility*	Total PPE/TA	WC02501/WC02999
9 Non debt tax	Depreciation/TA	
shield		(WC18198-WC18191)/WC02999
10 Investment	CAPEX/TA	WC04601/WC02999
11 Dividend	Total Dividend/TA	WC04551/WC02999
12 Cash holdings	Cash/TA	WC02003/WC02999
13 Company's Age	2010 – DOB	2010-BASE OR START DATE
14 Sales	log(Total Sales)	log(WC01001)
15 Cflow	(Pre-tax Profit +depreciation)/TA	(WC01001+WC04049)/WC02999
16 Operating CF	Nett CF from operating activities/ TA	WC04860 / WC02999
17 ROA	Net Income/ TA	WC01751/ WC02999

Appendix 2 OLS regressions with individual CEO's and CFO's characteristics

Dependent variable in all models is leverage (LTD=long-term debt/total assets). Models include control variables (size, tangibility, MKTB, profitability) at time t-1 and characteristics and leverage at time t. Time and industry dummies are included in all models. *'CEO Tenure'* is a numeric variable that counts years of CEO in the analysed firm. '*CEO*' is ownership of CEO presented as a percentage of shares outstanding. '*CEO past performance'* is a ratio of operating cash flow to total assets lagged by one year (t-1). '*CFO NF1'* is a dummy variable that takes the value of 1 if CFO has at least one external directorship and zero otherwise. '*CFO Older than CEO'* is a dummy variable that takes the value of 1, if CFO is older than CEO. '*CFO longer tenure than CEO*' is a dummy variable that takes the value of one if CFO's tenure is longer than CEO's. *'CFO larger OS than CEO'* is a dummy variable that takes the value of one if CFO has larger ownership than CFO and zero otherwise. *'Profitability'* is the ratio of earnings before interest and tax (EBIT) to total assets. '*MKTB'* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. '*Size'* is measured by logarithm of total assets in 2000 prices. 'Tangibility' is the ratio of property

plant and equipment to total assets. *BC* is the board capture index whose estimation is described in section 4.1. CFO Index is an index that describes CFO's power in comparison to CFO (its estimation is described in section 4.1).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Size	0.031***	0.030***	0.031***	0.031***	0.031***	0.032***	0.031***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Tangibility	0.177***	0.175***	0.184***	0.173***	0.175***	0.173***	0.177***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
MKTB	-0.006***	-0.007***	-0.007***	-0.007***	-0.007***	-0.007***	-0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Profitability	-0.009	-0.014	0.056**	-0.015	-0.013	-0.016	-0.009
	(0.022)	(0.022)	(0.028)	(0.022)	(0.022)	(0.022)	(0.022)
CEO Tenure	-0.001**						-0.001**
	(0.000)						(0.000)
CEO OS		-0.043					
		(0.028)					
CEO past performance			-0.142***				
			(0.028)				
CFO longer tenure				0.013*			
				(0.008)			
CFO larger OS					-0.005		
					(0.006)		
CFO Older						-0.018***	
						(0.007)	
CFO NF1	-0.269***	-0.262***	-0.270***	-0.273***	-0.271***	-0.280***	-0.269***
	(0.023)	(0.024)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
_cons	0.031***	0.030***	0.031***	0.031***	0.031***	0.032***	0.031***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
N	1947	1947	1947	1947	1947	1947	1947
R^2	0.478	0.477	0.482	0.477	0.476	0.479	0.478

Appendix 3 Correlation table of the main variables used in the analysis

'LTD' and *'TDA'* are proxies for leverage. *'LTD'* is a ratio of long-term debt to total assets. '*TDA'* is ratio of total debt to total assets. *'Profitability'* is the ratio of earnings before interest and tax (EBIT) to total assets. *'MKTB'* [market to book] is the ratio of book value of total assets minus the book value of equity to book value of assets. *'Size'* is measured by logarithm of total assets in 2000 prices. 'Tangibility' is the ratio of property plant and equipment to total assets. *BC* is the board capture index whose estimation is described in section 4.1. CFO Index is an index that describes CFO's power in comparison to CFO (its estimation is described in section 4.1).

	LTD	TDA	Profitability	MKTB	Size	Tangibility	BC	CFO Index
LTD	1							
TDA	0.909	1						
	(0.000)							
Profitability	0.008	-0.029	1					
	(0.704)	(0.161)						
MKTB	-0.208	-0.256	0.144	1				
	(0.000)	(0.000)	(0.000)					

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Size	0.511	0.462	0.180	-0.163	1			
	(0.000)	(0.000)	(0.000)	(0.000)				
Tangibility	0.362	0.341	0.067	-0.165	0.258	1		
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)			
BC	-0.070	-0.097	0.321	0.046	-0.028	0.050	1	
	(0.001)	(0.000)	(0.000)	(0.030)	(0.175)	(0.017)		
CFO Index	0.022	0.029	-0.005	-0.022	0.030	0.014	-0.418	1
	(0.304)	(0.169)	(0.801)	(0.293)	(0.157)	(0.497)	(0.000)	

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