# Pay for no performance? Executive pay and performance in EU banks

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ABSTRACT

Existing corporate governance structures mainly focus only on the relationship between managers and shareholders, with little emphasis on debt holders. While this reflects the nature of the capital structure for a majority of firms, banks operate differently and are highly leveraged. However, the different balance of risk bearing by the shareholders and debtholders for banks is not reflected in contemporary corporate governance in large corporations today. In this study, we examine the pay-performance relationship taking into consideration special governance structures in place in the banking sector, for a sample of 65 EU banks and bank holding companies between 2000 and 2010. The sample of EU banks also allows for the plurality of governance structures. Using a 3SLS estimation to cater for endogeneity problems that have plagued prior work, we find no evidence of a contemporaneous relationship between bank performance and pay, suggesting that bank executives are paid independent of past and expected future performance. Instead, we find the driving factors behind executive pay levels to be board size, managerial ownership, bank size, capital ratios and dividend status. The 3SLS estimation also allows us to shed light on the complementarity and substitution effects of different governance mechanisms in the banking sector, providing further evidence that governance relationships cannot be examined in isolation.

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## 1. Introduction

One of the most controversial episodes during the recent financial crisis of 2007-2008 was when American insurance group AIG were reported to have awarded its executives with bonuses amounting to $42m despite suffering a loss of $40.5b in their financial products unit and ultimately requiring a bailout under the US TARP (Troubled Asset Relief Program). The mismatch between pay awards and actualized performance continues to be a problematic issue in the banking and financial services sector, and various regulations have been implemented in the US, UK and the EU to try and curb the problem.

The tenuous link between pay and performance has been an issue that has been researched at some length in the non-banking sector, but less attention has been given to banks, especially outside of the US. Banks are of particular interest because of their unique corporate financing structure, where potentially up to 90% of capital is debt rather than equity. This means that unlike non-banks, risk is borne largely by creditors rather than equity holders. However, existing corporate governance structures as advocated by best practice guidelines do not reflect this, instead having a primary focus on the relationship between shareholders and managers. Existing work and findings of the pay-performance link reflects this, and therefore prior findings on the pay-performance relationship from the literature cannot be automatically extended to the banking sector. Realising this, scholars of banking and finance have encouraged more research into the corporate governance of banks and financial institutions (Macey and O'Hara, 2003; Adams and Mehran, 2003; Mehran, 2004; Sierra et al. 2006; Cooper, 2009; Claessens and Yurtoglu, 2012).

Another key issue arising from prior studies of the pay-performance relationship is the inherent endogeneity of the corporate governance mechanisms studied, which impacts the ability to correctly interpret correlations observed among variables. Due to differences in the contracting environment, compensation arrangements are the endogenous outcome of a complex process involving a large number of observable and unobservable firm characteristics (Palia, 2001). Therefore, it is often problematical to interpret any observed correlation between executive pay and firm outcomes as evidence of a causal relationship. This is highlighted by

Devers et al Devers et al. (2007) with respect to executive pay, where they contend whether executive pay should be interpreted as a predictor variable for performance (motivation) or predicted variable from performance (reward). Another approach is that taken by Jensen et al. (2004) who make no distinction between motivations and reward in the pay-performance relationship as the reward in the current period signals something about the pay-performance relation for future periods and therefore affects motivation or incentives.

A further complicating factor in prior studies that have looked at multiple corporate governance mechanisms lies in the substitute vs. compliment argument. Theoretically, when designing the executive pay contracts firms consider various governance mechanisms which are structurally related to one another, either as complements or substitutes depending on the costs and benefits of these mechanisms. The substitution hypothesis posits that the effective use of any other governance mechanisms – such as the monitoring by outside directors and the monitoring by large outside shareholders – might also reduce the level and structures of executive compensation needed to align managers' incentives with those of shareholders (Agrawal and Knoeber, 1996; Mehran, 1995; Rediker and Seth, 1995; Talley and Johnsen, 2004; Ozkan, 2011). In contrast, the complementarity hypothesis stresses that the effectiveness of the executive compensation mechanism is jointly determined with most governance mechanisms to mitigate agency problems and may depend on the simultaneous use of other mechanisms (Aguilera et al., 2008; Fahlenbrach, 2008; Ward et al. 2009). The various corporate governance mechanisms available to the firm involve costs and benefits, meaning the most efficient governance structure may vary by firm (Gillan, Hartzell, and Starks, 2006).

Taken together, we attempt to solve these three issues in this study, by examining the relationship between executive pay and bank performance for a sample of EU banks over ten years, while at the same time offering a methodological approach that attempts to overcome the econometric problems observed in earlier work. In particular we examine the dynamics between executive pay, monitoring mechanisms and accounting and market measures of bank performance.

This research adds to the handful of published similar studies of corporate governance in the banking sector (that focus primarily on the US banking market) and makes it possible to test whether the existing evidence holds for a market, such as Europe, with historically different managerial pay structures and heterogeneous corporate governance systems. Specifically this

study contributes to building a better understanding of executive compensation, performance and corporate governance issues in the European banking industry in several ways. This paper fills this gap using manually collected data on the executive compensation and corporate governance variables for 67 publicly-listed commercial and bank-holding companies operating in 13 EU countries over the period 2000-2010.

The methodology we apply addresses the endogeneity problems which may arise from the possible simultaneous use of executive pay and other corporate governance mechanisms (Chung and Pruitt, 1996; Bhagat and Black, 2002; Black et al., 2006; Wintoki et al. 2012). We develop a system of seven simultaneous equations and using the Three-Stage Least Squares (3SLS) estimation method. The simultaneous model includes executive pay as an explanatory variable together with external and internal monitoring mechanisms. Alternative definitions of market and accounting-based bank performance metrics are employed as dependent variables. The system treats bank performance as well as corporate governance mechanisms, including the executive compensation, as endogenous, and allows each of them to affect all the others in order to capture possible substitution effects.

The European banking industry is an appropriate setting to explore executive pay according to the different corporate governance structures that banks have adopted, either Anglo-American or Franco-German. This latter system, for example, dominates in continental Europe and has not undergone the degree of separation of ownership and control as observed in Anglo-American nations. Most European banks are characterised by relatively high level of ownership concentration and thus differ from those in the UK and US where widely held firms are more common (Croci et al. 2012); they are also characterised by a lower investor protection and less developed financial markets compared to the UK and US (Franks et al., 2011). This sheds light on the relationship between executive pay and performance in non-Anglo American corporate governance structures.

The findings indicate an absence of a contemporaneous relationship between executive pay and bank performance measured alternatively by return on assets, earnings per share and annual share returns. We find no empirical evidence that bank performance is the determinant factor of executive directors' compensations for our sample of EU banks. In addition, our evidence reveals that banks tend to compensate their top management regardless of the financial performance status of the banks. The key factors that appear significant in explaining executive

pay levels in European banks and unrelated to performance are: bank size, managerial ownership, board size, Tier 1 capital ratios and dividend status. In addition, executive pay levels are lower when there are more outsiders on the board and more growth opportunity (proxied by the market-to-book ratio). Furthermore, the results do not support the widespread hypothesis of a positive relationship between corporate governance structure and bank performance.

The results of the simultaneous models further reveal significant interdependencies, whether complementarity or substitutability, among executive compensation, corporate governance and bank performance variables. For example, banks with a large shareholder tend to have larger boards and more outside directors sitting on their board, while the block owners who are already sitting on the board tend to have less outside directors joining them in the board. Finally, banks with more debt capital tend to have less managerial ownership held by directors.

The remained of this paper is organised as follows: Section 2 reviews the existing literature on executive compensation. Section 3 discusses the data and sample selection and Section 4 presents the empirical methodology. Section 5 reports the empirical results while Section 6 concludes and offers a discussion of the main policy implications.


## 2. Literature review on the relationship between executive pay and bank performance

Banks have their own special features distinguishing them from other firms, and that pose unique corporate governance problems for managers and regulators as well as for claimants on banks' cash flows (Macey and O'Hara, 2003). They have little equity in their capital structure and are highly leveraged relative to firms in other industries. Thus, the unique bank capital structure may weaken the case for making shareholders the exclusive beneficiaries of fiduciary duties as is common in the non-banking sector, and may make debt holders (deposits and other borrowings) the primary claimholders (Macey and O'Hara, 2003). The conflict between the interests of debt holders and shareholders, which exists in every firm, is intensified in banks due to the high debt-to-equity ratios. While higher management compensation strengthens executive motivation to raise the value of the firm, this may lead to conflicts of interest because debt holders do not participate in the high profit firms beyond the contractually agreed debt service,

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but they share in losses in case of insolvency (John and John, 1993; John and Qian, 2003; John et al., 2010).

Banks are also traditionally heavily regulated. The regulatory environment may influence the nature and effectiveness of corporate control mechanisms. In particular, the existence of deposit insurance and capital requirements, among other factors, may lead to moral hazard and sub-optimal behaviour (John and Qian, 2003; Crawford et al., 1995). The combination of the special governance features of banks may create a unique form of corporate governance and, consequently, would require different applications of executive compensation.

Several studies based on US banking data indicate that the levels and structures of executive compensation in banks are substantially different from those in other industries due to differences in their capital structure and the regulatory environment. Within and across regulated industries, regulation has been associated with lower compensation, fewer stock options and lower pay-performance sensitivity in executive compensation than do CEOs in other industries (Houston and James, 1995; Adams and Mehran, 2003). However, empirical and theoretical studies suggest that with deregulation banks began to change their executive pay structures and to rely more on performance-based compensation schemes to encourage CEOs to search out and invest in positive Net Present Value (NPV) projects. Crawford et al., (1995) found a significant increase in the level of pay-performance sensitivity for 239 CEOs of 124 US commercial banks between the pre- and post-1982 period (after a significant deregulation process implemented in 1981-82). Similarly, Hubbard and Palia (1995) indicate a substantial rise in the levels of CEO compensation and a strong pay-performance relationship in deregulated interstate banking markets for a sample of 147 US banks over the 1980s. The relationship between CEO pay and bank performance is found to be more pronounced when interstate banking is permitted than when it is not permitted. Likewise, Magnan and St-Onge (1997) find that executive compensation is more contingent upon bank performance in situations of high managerial discretion than in situations of low managerial discretion for a sample of the largest 300 commercial banks (822 bank-year observations) operating in the US over 1984-87.

In addition to deregulation, Becher et al. (2005) observed that US banks responded to new opportunities, increased competition and an expanding market for corporate control by improving internal monitoring through relying more on performance-based compensation to align executive interests with those of shareholders. They found differences in compensation

structures disappear gradually over the 1990s (1992 to 1999) for a sample of 700 US banks drawn from the ExecuComp database. Cunat and Guadalupe (2008) complement the above findings by documenting an increase in the sensitivity of pay to performance for 29,994 top five executives (ranked by salary and bonus) of all the firms in the US financial sector during the period ranging from 1992 to 2002.

While the deregulation of the financial services industry has led to higher competitive pressure and made bank compensation structures similar to those in non-banks, recent changes in banking regulations which took place in response to the current financial crisis has seen the introduction of a new set of restrictions emerged on executive compensation aimed at reining in excessive risk-taking. For example, the UK Financial Services Authority (FSA), through its remuneration code, now controls both the level and structure of executive pay in all financial institutions. [1] The main the applications of the new Remuneration Code are: at least 40-60% of variable pay must be deferred over a period of minimum 3- 5 years; and at least 50 % of any variable remuneration components (both deferred and non-deferred) must be made in shares or other shares instruments (share-linked and other equivalent non-cash instruments). Any deferred remuneration paid in cash and non-cash should also be subject to performance criteria and performance adjustments may apply if necessary, where there is evidence of material error or business downturn. The Committee of European Banking Supervisors (CEBS) suggests a similar set of remuneration policies, and ensuring an alignment of remuneration principles across the European Union countries (see the European Commission remuneration draft, 2009, 2010). The Committee of European Banking Supervisors Guidelines stress that the 50% minimum threshold for instruments must be applied equally to the non-deferred and the deferred components; in other words, firms must apply the same chosen ratio between instruments and cash for their total variable remuneration to both the upfront and deferred components (Guidelines on Remuneration Policies and Practices, 10 December 2010, paragraph 133).[2] Therefore, the fact that many changes were introduced in the aftermath of the 2007-09 financial

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[1] The Financial Services Authority's Remuneration Code was first published in August 2009 following the financial crisis of 2007-09. The rules came into effect on 1 January 2010, but covered 27 of the largest banks, building societies and broker dealers. A new Remuneration Code came into force on 1 January 2011 to widen it is scope (covering 2,500 financial firms) to apply to all banks, building societies and Capital Adequacy Directive investment firms.

[2] See, e.g., "Fed Hits Banks with Pay Limits", The Wall Street Journal (October 23, 2009). See also IMF, 2010, Appendix 2; 'FSA Unveils Tough New Pay and Bonus code', Financial Times, July 30 2010; 'Big Bonuses Face Curbs', Financial Times, 17 May 2010.

crisis provide a unique setting for examining whether and how executive pay is related to the performance of banks prior and after the financial crisis.

## 2.1 The Endogeneity Problem in Corporate Governance Research

From an agency theory perspective, higher executive pay is expected to lead to better bank performance, but equally, better bank performance is expected to lead to higher pay levels. This highlights the endogeneity issue in the relationship, which is one of the key issues this study aims to address using the 3SLS methodology (see Section 3.3). Prior studies such as Joyce (2001), Yu and Zhang (2004) and Krause (2009) all employ simple correlation analysis and found weak, weak and no evidence respectively of a pay-performance relationship, which is counter-intuitive to theoretical predictions.

Similar observations were recorded in research that looked at executive pay in US banks during the recent financial crisis. Using a sample of 95 US bank holding companies on CEO compensation for 2006 and bank performance during the crisis period (using the returns of banks from July 1, 2007 to December 31, 2008), Fahlenbrach and Stulz (2011) find evidence that banks where CEOs had better incentives in terms of the dollar value of their stake performed significantly worse than banks where the CEOs had poorer incentives. Internationally, Beltratti and Stulz (2011) explored the relationship between bank performance and bank-level governance, country-level governance, regulation, bank balance sheet figures and profitability characteristics before the 2007-09 crisis for a sample of 164 large banks (with total assets in excess of $50 billion) in 32 countries. The authors find no evidence that banks with CEOs whose incentives were better aligned with the interests of their shareholders performed better during the crisis. The authors also provide some evidence that these banks actually performed worse both in terms of stock returns and in terms of accounting return on equity. Furthermore, while the differences in banking regulations across countries are generally uncorrelated with the performance of banks during the crisis, some pre-crisis bank characteristics such as having a large capital and a large deposit financing was found to be related to significantly higher returns during the crisis.

Overall, the results of earlier studies have revealed a weak relationship, at best, between executive pay and bank performance. Most studies on executive compensation in banks have concluded that the relationship between pay and performance is either non-existent (Beltratti and

Stulz, 2011; Fahlenbrach and Stulz, 2012; and Doucouliagos et al., 2007), extremely weak, or economically miniscule (Joyce, 2001; Yu and Zhang, 2004; Krause, 2009). However, one major limitation of most of studies reviewed above is that they are based on a relatively short time frame. For example, Yu and Zhang (2004), Krause (2009), Fahlenbrach and Stulz (2012) and Beltratti and Stulz (2011) are all based on one-year data; Joyce's study (2001) is based on two-year data and Grove et al. (2011)'s study is based on four-year data. This is a limitation that might affect significantly the results on the relationship between compensation and performance relationship because it may take longer time periods for the incentives to be paid. To cater for this, we use a ten-year sample in this paper.

To some extent, the inconclusive nature of prior studies can be attributed to either an attempt to test the relationship between executive compensation and firm performance in isolation, and / or consider both corporate governance and firm characteristics using a single equation method, notably the Ordinary Least Squares (OLS) coefficients estimates (e.g., Doucouliagos et al. 2007; Krause, 2009; Beltratti and Stulz, 2011; Fahlenbrach and Stulz, 2012). Econometrically, the results of these studies can only be interpreted as partial correlations because they do not reveal any causal relationships. Specifically, they do not appropriately address the issue of endogeneity that affects most empirical studies on corporate governance (Wintoki et al., 2012).

The problem with measuring the effects of compensation is one of its identification. Compensation pay arrangements are the endogenous outcome of a complex process that involves various factors. These include, among others: corporate governance structures, board of directors, compensation consultants, compensation committees, CEO characteristics and the managerial labour market. As a result, compensation arrangements are correlated with a large number of observable and unobservable firm characteristics that arise due to differences in the contracting environment (Palia, 2001). That is, it is extremely difficult to interpret any observed correlation between executive pay and firm performance as evidence of a causal relationship. For example, executive compensation and firm performance may be correlated because compensation affects performance, firm performance affects pay or an unobserved firm characteristic affects both variables.

Furthermore, executive compensation represents one of several ways of aligning the interests of managers with those of shareholders in order to mitigate agency problems.

Theoretically, firms consider various governance mechanisms, structurally related to one another either as complements or substitutes to determine the governance environment of a firm. The substitution hypothesis posits that governance mechanisms are substitutes for each other and that the greater use of one mechanism is not necessarily positively related to firm performance, where one mechanism is used less and others are used more resulting eventually in good performance (Agrawal and Knoeber, 1996). Therefore, the effective use of any other governance mechanisms might also reduce the level and the structures of executive compensation needed to align managers' incentives with those of shareholders (Mehran, 1995; Rediker and Seth, 1995; Talley and Johnsen, 2004; Ozkan, 2011). The complementarity hypothesis, in contrast, stresses that governance mechanisms are complementary to potential combinations of governance practices that are jointly determined. Therefore, the effectiveness of the executive compensation mechanism is jointly determined with most governance mechanisms and may depend on the simultaneous use of other mechanisms in order to mitigate agency problems (Aguilera et al., 2008; Fahlenbrach, 2008; Ward et al., 2009).

Econometrically, the OLS single-equation method commonly used in studies only utilises the variables that appear in the equation and takes into account any restrictions placed on that equation. The interdependence between the stochastic disturbance and the endogenous explanatory variables causes the estimators applied by the OLS to be not only biased no matter how large the sample size, but also inconsistent. Beiner et al. (2006) and Bhagat and Bolton (2008), among others, highlight the need for additional research that formulates a system of simultaneous equations which specifies the relationships among corporate governance variables rather than using a single equation model.

One potential solution to address the reverse causality issue and the limitations of the OLS models is using the method of the Two-Stage Least Squares (2SLS). Palia (2001) relies on the 2SLS estimation to examine the impact of executive compensation on bank performance and then to analyse the impact of performance on governance mechanisms. The 2SLS estimation implies the estimation of a second equation that takes into account specifically the causal relationship between executive compensation and bank performance, rather than the whole corporate governance system. It provides not only one estimate per parameter, but also offers

unbiased and consistent estimates[3]. However, taking both endogeneity and simultaneity into consideration, applying a single equation and using OLS or applying the Two-Stage Least Squares (2SLS) will not capture the actual connection between the variables of interest and the results will be difficult to interpret because the right-hand-side variables should include the following endogenous variables: executive compensation, corporate governance and performance.

A more suitable alternative model that can potentially solve the problems of OLS and 2SLS is the Three-Stage Least Squares (3SLS) method proposed by Zellner and Theill (1962). The 3SLS method takes into account all the restrictions on the equations in the system and estimates all the equations simultaneously. Compared with OLS, 3SLS pays more attention to the correlations of stochastic disturbance terms of the cross-equations and the estimators are unbiased and consistent. Equally, the 3SLS is preferred to the 2SLS model in that it considers more the stationary convergence of the mean square of the values taken by each lagged endogenous variables and the estimators have the asymptotic efficiency. The computation steps in 3SLS will be described in more detail in Section 4.2.

The 2SLS model was employed by Agrawal and Knoeber (1996) to estimate the relationship between corporate governance and firm performance for a sample of almost 400 US firms in 1987. Their results were different from findings from prior studies that employed OLS, where they found that only the negative effect of outside directors on firm performance remains when the interdependence among mechanisms is accounted for in simultaneous system estimations. However, the relation between inside ownership and firm performance disappeared when other governance mechanisms, which also provide incentives to managers, are introduced into the estimation. Chung and Pruitt (1996) explored executive pay and firm performance using the same time period with a larger sample of 1000 US firms, and employed a 3SLS estimation. They find that executive compensation, managerial ownership and the market value of the firm are jointly determined.

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[3] Nevertheless, the sampling distribution of 2SLS coefficient estimators still cannot satisfy the requirements of the asymptotic property, such as approximate normality, even in the large-sample analysis because the lagged endogenous variables will be contained in the equation systems employed in the present study and the mean square of the values cannot converge in probability to a positive limit. The 2SLS method assumes that error for both equations is independent and estimates structural equation parameters separately. Hence, it might lose some information when, in fact, the disturbance terms are not independent (see e.g. Mikhail, 1975).

Findings of studies which employ 3SLS methods are largely consistent. Black et al (2006; 2010), Beiner et al (2006), Tu et al(2007) and Bhagat and Bolton (2008) all found a positive relationship between corporate governance and firm performance or firm value in Korea, Switzerland, Taiwan and the US respectively. Black et al (2006;2010) went on to provide support for the superiority of the 2SLS and 3SLS estimations over OLS by demonstrating that the relationship between share price and corporate governance are more pronounced and significant when using 2SLS and 3SLS models relative to OLS estimations.

To date, however, as far as we are aware there are no studies using the 3SLS model in compensation and/corporate governance studies specifically on the banking sector. This study allows us to fill this methodological gap. Section 3 illustrates the data used for the empirical analysis while Section 4 describes the main methodological issues.

## 3. Sample Selection and Data

The study constructs a unique data set on executive compensation and corporate governance for the 67 listed commercial banks and bank holding companies (BHCs) in 13 European Union countries. These are Austria, Belgium, Denmark, Finland, France, Germany, Netherlands, Italy, Ireland, Portugal, Spain, Sweden, and the UK. The initial sample included 107 listed commercial banks and bank holding companies over 2000-2010. Financial and accounting information for each bank in the sample were obtained from Bankscope and Datastream. The sample period is worthwhile as it incorporates the years of the global financial crisis (2007-09) when the public debate on executive compensation increased sharply. To be included in our final sample a bank should have met two basic criteria: (1) availability of executive pay data for all years under study; and (2) accessibility to financial and corporate governance data in the same period. 67 large commercial banks and bank holding companies satisfied these criteria and the final sample consists of 564 bank-year observations over 2000-2010. These banks were amongst the 107 largest (in terms of book value of assets) banks during the period examined.[4]

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[4] Bankscope identifies 25 bank holding companies for the selected countries of which 13 are considered for our analysis. The remaining 12 Holding Companies were excluded because their nature of operation is non-banking activities (i.e. insurance, holding companies, asset management, and investment companies). Specifically on Denmark, it should be noted that the database reports 32 commercial listed banks. However, only the first 3 largest

Table 1 (panels A and B) presents the countries included in the analysis and the number of observations (absolute numbers and percentages) by country. Panel A provides the breakdown of the sample by country. Italy has the largest share of banks and accounts for roughly 26 percent of the sample; UK, Germany and Spain account for approximately 15%, 13% and 11%, respectively. The share for the other European countries range from a minimum of 2% (Finland) to 7% (France). Panel B reports the distribution of the bank-year observations by year. They range from a minimum of 22 in 2000 to a maximum of 63 in 2010, possibly indicating that the executive compensation disclosure in annual reports has increased over time and has expanded to cover an increasingly broad range of executive compensation data in recent years.

A large proportion of the data for this study was hand-collected. Data on executive compensation was gathered from the annual reports and corporate governance reports on both cash-based and equity-based components of executive compensation. These consist of cash compensation, annual salary, short- and long-term bonuses and any other benefits, in addition to stock options granted and exercised by executives and deferred compensation.

All other data on ownership structure, shareholder information, large shareholders, board composition CEO duality and governance system (unitary vs. two-tier) etc. were drawn manually from the annual reports. They include, for example, details on the large shareholders and the size of their holdings; the percentage of cumulated voting rights exercised by the largest shareholder with large equity holdings and the individuals who own large portion of the share capital (greater than 3%); and management shareholding (i.e. share ownership by executive directors).

## 4. Methodological Approach and Empirical Model

The methodological approach used in this study considers the possible endogeneity and simultaneity issues of executive compensation, corporate governance and firm performance by adopting simultaneous equations method and applies the Three-Stage least squares (3SLS) approach (described in Section 4.2). A simultaneous-equations model with executive compensation, corporate governance mechanisms and performance measures are jointly determined within the model. Specifically, our system is made up of seven simultaneous equations to allow for interdependence between each of executive compensation, large

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banks are included in our final sample as the rest are very small bank, and there is either no compensation data or no complete data were available.

shareholders, managerial ownership, debt holders, board size and the presence of outside directors, where each governance mechanism is the dependent variable in one of the equations.

Firm performance is allowed to depend on governance and other control variables in one equation. While in other equations, corporate governance mechanisms, including executive compensation, can depend on performance and other control variables. In order to control for reverse causality in the relationship between the corporate governance mechanisms including executive compensation and bank performance, bank performance is also included as an explanatory variable in all other equations. This process allows for a possible interdependence. In addition, by doing so, firm performance, executive compensation, and the corporate governance variables can be endogenously determined, and their relationships can be examined simultaneously. As shown in detail in Sections 4.2.1-3.3.2, a set of exogenous variables for each endogenously determined variable is added. This is a variable that is correlated with the variable of interest (the dependent variable), but is assumed to be uncorrelated with the error term.

## 4.1 Endogenous and Exogenous Variables Included in the Model

In this study we include seven endogenous variables, namely: (1) bank performance, (2) large shareholders, (3) leverage, (4) managerial ownership, (5) board size, (6) outside directors and (7) total executive compensation. We also consider twelve exogenous variables and these are described later in this section.

(1) The first endogenous variable is bank performance (PERF). Both accounting and market performance measures are important in explaining firms' executive compensation levels. Accounting performance measures are backward-looking indicators and represent a realization of a firm's prior policies; while market-based measures are forward-looking and their value are positively related to future stock price (Chen and Ma, 2011). Empirically, the evidence on the relationship between alternative measures of performance and executive compensation is generally mixed. Several studies (Sloan, 1993; Carpenter and Sanders, 2002; and Kerr and Bettis, 1987) found strong relationships between accounting-based measures and executive compensation (Sloan, 1993; Carpenter and Sanders, 2002; and Kerr and Bettis, 1987), while others found that executive compensation is more related to market-based performance measures (Coughlan and Schmidt, 1985; Murphy, 1985; and Conyon et al., 2000). In this study, we have therefore considered both types of performance measures, namely, the following two accounting-

based performance measures: Earning per Share (EPS), calculated as the ratio of the net income divided by number of outstanding shares; Return on Assets (ROA), as the ratio of operating profit before depreciation and provisions divided by total assets; and one market-based performance measure i.e., the annual shares return (SRET). This is measured as the natural log of the annual share return ($R_{it} = ln\ (P_{it} - P_{it}-1)/\ (P_{it}-1)$).[5]

(2) The variable large shareholders (LSHRH) is the sum of large shareholders with equity holdings greater than 3 per cent of total bank equity (see Agrawal and Knoeber, 1995). Theoretically, shareholders who own large portions of the share capital in a firm are more likely to be involved in corporate decisions. In addition, their ability to monitor managers will increase as their proportion of share capital increases. Previous (non-banking) studies suggest a greater role for large shareholders might influence firms' corporate governance as well as performance (Shleifer and Vishny, 1997; Gugler, 1999; Hartzell and Starks, 2003; Cronqvist and Fahlenbrach, 2009). However, these results may not reflect the peculiarities of the banking industry. On one hand, banks are different in terms of their capital structure as they have relatively little equity compared with similar sized firms in other industries. This may weaken the case for making shareholders the exclusive beneficiaries of fiduciary duties and make debt holders such as depositors the primary claimants (Macey and O'Hara, 2003). On the other hand, more direct monitoring by large shareholders has been found to improve performance in the US and UK where the levels of ownership concentration are low. However, this may not be the case for banks operating in European countries where ownership concentration is relatively high compared to other countries. Hence, different levels of ownership concentration (high or low) may lead to different incentives and capacities to perform efficient monitoring. Thus, the relationship between concentrated ownership and bank performance may be sensitive to the level of the controlling shareholder in the banks.

(3) The third endogenous corporate governance variable is leverage (LEVE) that reflects the influence of the capital structure and is calculated as the percentage of total debt to total assets. Jensen (1986) suggests that greater debt usage can serve as a good corporate governance mechanism by reducing agency problems, such as perquisite consumption often associated with managers having excess cash flows. For instance, debt holders tend to be more conservative and

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[5] As a robustness check we have also used the daily shares return calculated as the natural logarithmic of the average of daily share return series ($R_{it} = ln\ (P_{it}/(P_{it}-1)$).

are more likely to constrain the risk-taking activities of a firm (Levine, 2004; Mintz, 2005). However, debt holders play a different role in the banking industry due to regulation and the presence of deposit insurance provisions. Deposit insurance may remove the incentives for insured depositors to monitor bank directors' and shareholders' behaviour and to control excessive risk-taking. This occurs because depositors' funds are protected by the national deposit insurance provision and their investment is guaranteed regardless of the outcomes of the investment strategies that the banks select (Cooper, 2009; Crawford et al., 1995; Macey and O'Hara, 2003). Empirically, several US banking sector studies (Larcker et al., 2007; Grove et al., 2009) find that highly leveraged firms are characterised by a negative relationship with performance as a high proportion of debt over equity signals weak corporate governance.

(4) Another endogenous corporate governance variable is managerial ownership (MOWNR) measured as the number of shares owned by the board of director's members over total number of shares outstanding. Managerial ownership has been suggested as a potential mechanism to reduce agency problems which arise from separation of ownership and control, and it simultaneously helps to align the interests of managers with those of shareholders by increasing their monitoring effectiveness. Theoretically, directors whose personal wealth is significantly linked to the value of the firm will have the incentive to act in the interest of outside shareholders. As part owners, directors will enjoy the benefits of high performance but they will also incur some of the costs (Berle and Means, 1932; Jensen and Meckling, 1976; Jensen, 1993). Therefore, the mainstream corporate governance literature suggests that linking the director's wealth with the value of the firm better motivates performance (Mehran, 1995; Chung and Pruitt, 1996; Florackis, 2005).

(5) Board size (BODSIZE) is calculated as the number of directors on a bank's board. Board size and its implications for management monitoring roles are considered as a one of the most prevalent corporate governance issues (Boyd, 1994; 1995). A larger board is comprised of more experts from various fields and increases the resources accessible to a firm (Dalton, et al., 1999). However, the ability of board of directors to monitor management decreases as board size increases, due to greater free-riding problems and greater decision-making time amongst directors (Jensen, 1993; Yermack, 1996). Therefore, it is argued that large boards will drag down their efficiency and impair firm performance (Hermalin and Weisbach, 2003). Previous studies document at most that board size has an inverse relationship with firm performance. For

example, Yermarck (1996) finds the profitability and operating efficiency ratios appear to decline as board size grows. A similar negative impact is observed by De Andres et al. (2005) for a sample of 450 non-financial companies operating in ten countries in Western Europe and North America. Similar results were also found in Cheng (2008) who employed data of 1,252 US firms over 1996-2004 and Guest (2009) for a large sample of 2,746 UK listed non-financial firms over 1981-2002. However, the relationship between board size and bank performance is expected to be different in the banking industry, since banks are typically characterised by a relatively larger board size compared to non-banking firms due to their complex organizational structure and the presence of more committees than other firms (Coles et al., 2008). Adams and Mehran (2003), for example, provide three reasons why board size may be different for banks. First, prior studies have shown that board size is positively correlated with firm size. Second, due to their complex organizational structure of bank holding companies (BHCs) that arises from their holding of subsidiary banks and the presence of more committees such as lending and credit risk committees, BHCs' boards tend to be larger. Third, the nature of acquisitions (hostile versus friendly) could play a role in maintaining the large size of an average BHC board. In addition, alternative corporate governance systems are significantly associated with different arrangements for board structures. For instance, the Anglo-American corporate governance system is characterized by a single board made up of executive and non-executive (outside directors) while in the Franco-German governance system the board of directors is characterized by dual board structure consisting of two separated boards: the management and the supervisory board (Conyon and Schwalbach, 1999).

(6) The sixth corporate governance variable is outside directors (OUTDIR) and is measured as the percentage of outside directors of the board i.e., directors without any executive function. These are also referred to as 'non-executive directors' or – for banks that adopt the two-tier board system –, 'supervisory board members'. Agency theory literature highlights that outside directors have the incentive to protect their own reputations as expert independent decision-makers and focus on improving corporate performance by: i) providing expert knowledge and effective monitoring of the board's decisions (Fama, 1980; Fama and Jensen, 1983a); ii) protecting the interests of minority shareholders (John and Senbet, 1998); and iii) ensuring greater effectiveness in designing management compensation contracts and reducing agency costs (Singh and Davidson, 2003). The majority of empirical results however, have

shown that boards of directors are an imperfect agent for shareholders, and the outside directors have a negative or no relationship with firm performance. Relevant US studies worth mentioning in this context are: Mehran (1995); Agrawal and Knoeber (1996); and Bhagat and Black (2002); UK studies include for example, Weir and Laing (2000) for 200 firms in 1992 and 1995; and McKnight and Weir (2009) for 128 non-financial firms over 1996-2000.

Only a handful of studies have focused on the role of outside directors in the banking sector. Similarly to non-bank studies, the evidence reveals that board independence is not related to bank performance. Recent studies include Staikouras et al. (2007) that examined data for a sample of 58 large European banks over the period 2002-2004; and Adams and Mehran (2012) using a sample of US banking firm data that spans 34 years data during 1986-1999, available in the Center for Research in Security Prices (CRSP) database. However, as mentioned above, outside (non-executive) directors in the Anglo-American corporate governance system sit on the company board and act as representatives of shareholders to monitor the performance of the management team, so is known as a system of 'internal control'. On the other hand, the supervisory board in the Franco-German corporate governance system has the responsibility to monitor the activities of the management board and therefore establishing a system of 'external control' (Conyon and Schwalbach, 1999).

With respect to banks that adopt the two-tier system, the assumption made is that the directors that belong to the supervisory board act as non-executives. These crucial structural differences in terms of monitor functions of outside directors across corporate governance systems is expected to affect the relationship between outside directors and bank performance.

(7) Last but not least, we include the total executive compensation (TECOMP) variable which is equal to the sum of the annual salary, short- and long-term bonuses and any other cash benefits, in addition to performance compensation and the stock options held and exercised by executive directors. A higher bank performance is expected to lead to higher compensation. Since this study covered European banks with different corporate governance systems, it considers management boards, executive committee members, as well as executive directors. TECOMP is the total compensation for the given year (at time $t$), while the other independent variables are lagged by one year ($t$-1) since the setting the compensation contract is designed and been fixed in shareholder annual meeting for the following year.

Table 2 summarises the endogenous variables and lists the exogenous variables included in our empirical models. As described below they will not be included in all equations because one the conditions of the model is that the number of predetermined variables should be greater than or equal to the number of included endogenous variables minus one.

## 4.2 The Simultaneous Equations Model System

The methodology used in this study is a simultaneous-equation model, which contains seven separate equations where the dependent variables are, alternatively: bank performance, five corporate governance monitoring mechanisms and total executive compensation. The seven equations (1) - (7) in our system are shown below in separate sub-sections. In order to meet the 3SLS identification's restrictions, a set of instrumental variables are added for each endogenously determined variable. The order-condition for identification states that the number of predetermined variables included in each equation must be greater than or equal to the number of included endogenous variables minus one. Therefore, at least six of the exogenous variables must be included for any single equation to identify the system of equation. First, to ensure the independence of all exogenous variables in each equation, the problem of multicollinearity is examined using the Variance Inflation Factor (VIF), where none was found.[6] Thereafter, we estimate all equations in the model simultaneously using the 3SLS estimation.

### 4.2.1   Bank Performance

The first equation in the simultaneous equations model shows that bank performance is not only a function of executive compensation but also of five other endogenous corporate governance variables along with the executive compensation and a set of exogenous variables that also include bank characteristics and control variables. Summarizing:

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[6] All VIF values of the seven equations tested by STATA statistics software are laid on the value of 1.0298 to 8.18821, which is smaller than 10 (i.e., a coefficient greater than 10 indicates a strong presence of multicollinearity, and the variable can be eliminated (see e.g. Neter et al., 1990). Thus, no multicollinearity can be found among the independent variables of each equation in our model. The structural model of 14 variables among seven multiple regression equations in seven equation-sets are determined for the 3SLS analysis.

$$PERF_t = \beta_0 + \sum_{i=1}^{6} \beta_i CG_{t-1} + \beta_7 BNKSIZE_t + \beta_8 DIV_t + \beta_9 TICAP_t + \beta_{10} DUAL_t$$

$$+ \beta_{11} BTYPE_t + \beta_{12} DEBTH_t + \beta_{13} BLOCK_t + \beta_{14} CRISIS + \varepsilon_t \qquad (1)$$

The exogenous variables in the first equation are: duality (CEODUAL), a dummy variable equal to 1 if the CEO is the chairman of the board, and zero otherwise. Fama and Jensen (1983) and Jensen (1993) suggest that CEO duality may weaken the board monitoring and control function, thereby increasing the agency cost and resulting in poor performance. While this dual capacity alleviates coordination and communication problems between the CEO and the board of directors, it may also lead to a concentration of power, thus a negative relation with bank performance is expected (Berg and Smith, 1978; Brickley et. al., 1997). Pi and Timme (1993) find a negative relationship between CEO duality and accounting performance measures for a sample of US banks over 1987-1990; while Cooper (2009) finds no relation between the CEO serving as chairman of the board and bank performance for 900 US community banks during 2006. Another variable included in the model as exogenous is block owners (BLOCK), a dummy variable for a formal representative for large shareholder in the board (can be considered as 'indirect interest' i.e. with more than 3% of total outstanding share). We also include bank size, as measured by the natural logarithm of total assets (BNKSIZE), and market-to-book ratio (MTBV) which represents a firm's growth opportunities. This is defined as the natural log of the ratio of the sum of the book value of debt and the market value of equity to the book value of assets. A positive relation between growth opportunities and performance is expected. Finally, dividend payment status (DIV), a variable that signals a healthy cash flow position (Beiner et al. 2006), is expressed as a dummy that is equal to 1 if the firm paid dividends in the previous year and zero otherwise. The study also controls for the years following the current financial crisis 2008 (CRISIS), a dummy variable which is equal to one for the years following the financial crisis (2008, 2009, 2010), and zero otherwise.

### 4.2.2 Large shareholders

The dependent variable in the second equation of our system is large shareholder (LSHRH) that is the percentage sum of stakes of all large shareholders with equity ownership greater than 3%. Large shareholders are assumed to provide better monitoring incentives and higher pay-for-performance relationship and lead thereafter, to better performance. LSHRH is expected to

depend not only on choices of the other control mechanisms but also to be less where the other mechanism is greater. Therefore, LSHRH will be determined by the five corporate governance variables, together with executive compensation and the exogenous variables, Summarizing:

$$LSHRH_t = \beta_0 + \sum_{i=1}^{5} \beta_i CG_{t-1} + \beta_6 PERF_{t-1} + \beta_7 BNKSIZE_t + \beta_8 DIV_t + \beta_9 TICAP_t$$
$$+ \beta_{10} DUAL_t + \beta_{11} BTYPE_t + \beta_{12} DEBTH_t + \beta_{13} CRISIS + \varepsilon_t \qquad (2)$$

Seven exogenous variables are included in the second equation and these are: bank size (BNKSIZE), as indicators of this cost arises from holding an undiversified portfolio (Agrawal and Knoeber, 1996), is expected to be negatively related with large shareholders. (BTYPE), as the board types which reflects the alternative corporate governance systems: while the model of widely dispersed corporate ownership is dominant in the US and the UK, the ownership concentration is relatively high and large shareholders control a significant number of firms in most European countries (e.g., La Porta et al., 1998; Conyon and Schwalbach, 1999). Block owners (BLOCK) is a dummy variable that is equal to 1 if the bank has a formal representative for large shareholders with more than 3% of total shares outstanding sitting in banks board of directors is included to capture the monitoring function associated with concentrated ownership, it is expect to be negatively related to the costs of outside large shareholders (Chung and Pruitt, 1996). The growth opportunities is expected to increase the attractiveness of holding shares, thus positive relationship is  expected between LSHRH and MTBV (Beiner et al. 2006). Finally, a positive relationship between LSHRH and (DIV) is expected, while a negative relationship is assumed between LSHRH and both CEODUAL and the financial crisis dummy (CRISIS).

### 4.2.3   Leverage

Jensen (1986, 1993), Stulz (1990), and Hart and Moore (1995), among others, suggested that debt helps to discourage overinvestment of free cash flow by self-serving managers. John and John (1993) argue that in a levered firm, such as a bank, the optimal management compensation scheme should not only align management incentives with shareholders' interests, but also have low pay–performance sensitivity in order to minimize incentives for risk-shifting on behalf of shareholders to the detriment of creditors. John and Qian (2003) and John et al. (2009) have

documented evidence that suggests a negative relationship between leverage and pay-for-performance sensitivity. Similarly, leverage will be determined by the five corporate governance variables, together with executive compensation and the exogenous variables, Summarizing,

$$
\begin{aligned}
LEVE_t = \beta_0 + \sum_{i=1}^{5} \beta_i CG_{t-1} &+ \beta_6 PERF_{t-1} + \beta_7 BNKSIZE_t + \ \beta_8 DIV_t + \beta_9 TICAP_t \\
&+ \beta_{10} DUAL_t + \beta_{11} BTYPE_t + \beta_{12} MTBV_t + \beta_{13} NOUTDIR_t \\
&+ \beta_{14} INTAS_t + \beta_{15} CRISIS + \ \varepsilon_t
\end{aligned} \tag{3}
$$

The exogenous variables in the third equation are: bank size (BNKSIZE), as LEVE is expected to depend positively upon bank size as the expected bankruptcy costs of debt should be smaller for larger firms (Agrawal and Knoeber, 1996). A negative relationship between LEVE and DIV is presumed because the availability of internal funds provides an alternative to debt financing (Beiner et al. 2006). In addition, a negative relationship between LEVE and (MTBV) as the banks with substantial growth opportunities is expected because their debt servicing requirements can limit management's ability to pursue positive net present value projects, leading to underinvestment problem Myers' (1977). Likewise, a negative relationship between (LEVE) and (CEODUAL) is expected as well the financial crisis variable (CRISIS).

### 4.2.4 Managerial ownership

The corporate governance literature argues that increasing stock ownership by managers and directors can be an effective control mechanism designed to reduce the moral hazard behavior of firm managers, and it helps to align the interests of managers with those of shareholders. Managerial ownership, measured by the percentage of insider director ownership over the total shareholding of the bank, is used as a dependent variable in our fourth equation. Consider that managerial ownership (MOWNR) is expected to depend not only on choices of the executive compensation but also to be dependent on other control mechanisms as well as the control and bank characteristic variables. Summarizing,

$$MOWNR_t = \beta_0 + \sum_{i=1}^{5} \beta_i CG_{t-1} + \beta_6 PERF_{t-1} + \beta_7 BNKSIZE_t + \beta_8 DIV_t$$

$$+ \beta_9 TICAP_t + \beta_{10} DUAL_t + \beta_{11} BTYPE_t + \beta_{12} DEBTH_t + \beta_{13} CRISIS$$

$$+ \varepsilon_t \hspace{6cm} (4)$$

The exogenous variables in the fourth equation are: bank size (BNKSIZE), as MOWNR is expected to be lower when the costs of holding an under diversified portfolio are higher (Chung and Pruitt, 1996). Demsetz (1983) suggests a negative relation between firm size and CEO stock ownership because of limited personal wealth of the typical CEO. In contrast, the market to book ratio (MTBV) is included as an indicator of growth opportunities for the bank, which increases the attractiveness of holding shares by directors. Thus, managerial ownership should be higher in high growth banks (Beiner et al. 2006). Likewise, the CEO with dual position will possibly try to keep a high share ownership to maintain his power as well the board members (Agrawal and Knoeber, 1996). In turn, the CEOs with high share ownership will be more likely to pursue strategies which maximise his personal welfare at the expense of shareholders and minimize his personal risk (Boyd, 1995). Hence, a positive relationship between managerial ownership MOWNR and CEODUAL is expected. Faleye (2007) and Chen et al. (2008) find that CEO duality is positively related to managerial ownership. Subordinated debt (DEBTH), expressed as the percentage of long term debt over the total debt, is expected to be negatively related to MOWNR. While subordinated debt holders are primarily concerned with the risk of the bank and that of its securities (John et al., 2009), the managerial ownership helps align the management interest with that of shareholders. DIV is also expected to have a negative relationship with MOWNR (Beiner et al. 2006), and MOWNR is expected to be positively related to the financial crisis dummy (CRISIS).

### 4.2.5 Board size

The dependent variable in the fifth equation of the system is board size (BODSIZE). The relationship between board size and bank performance is expected to be different in the banking industry, since banks already maintain very large board size due to their complex organizational structure and presence of more committees than other firms. Equally, BODSIZE is expected to depend not only on choices of the executive compensation but also on other control mechanisms as well as the control and bank characteristic variables, Summarizing:

$$BODSIZE_t = \beta_0 + \sum_{i=1}^{5} \beta_i CG_{t-1} + \beta_6 PERF_{t-1} + \beta_7 BNKSIZE_t + \beta_8 DIV_t$$
$$+ \beta_9 TICAP_t + \beta_{10} DUAL_t + \beta_{11} BTYPE_t + \beta_{12} BLOCK_t + \beta_{13} INTAS_t$$
$$+ \beta_{14} CRISIS + \varepsilon_t \tag{5}$$

Among the key exogenous variables are: bank size, as (BNKSIZE) is expected to be large in big bank due to their complex organizational structure and presence of more committees than other firms (Adams and Mehran, 2003; Beiner et al. 2006). CEODUAL, the dual capacity is expected to alleviate coordination and communication problems between the CEO and the board of directors; it may lead to a concentration of power and the election of fewer board members, thus a negative relationship is expected between with BODSIZE (Beiner et al. 2006). In relation to the corporate governance mechanisms, firms with CEO-duality typically are characterised by a larger board size, suggesting that these firms have poorer governance and more inefficient board.

### 4.2.6 Outside directors

The percentage of outside directors on the board, OUTDIR, is the dependent variable in the sixth equation of our system. Boards with a significant proportion of non-executive directors can limit the exercise of managerial discretion by exploiting their monitoring ability and protecting their reputation as effective and independent decision-makers. Thus, the greater the number of non-executive directors, the more likely the increase in monitoring effectiveness of the board which minimises the agency problems and increases firm performance. Overall, a higher proportion of outside directors on the board is expected to encourage better bank performance. The board characteristics explain a significant amount of the cross-sectional variation in management compensation. In this respect, Angbazo and Narayanan (1997) argue that boards with highly reputed outside directors are more effective in providing managers with the appropriate incentives (more heavily with long-term incentives than with cash-based pay) and thus ensuring better future firm performance.

$$OUTDIR_t = \beta_0 + \sum_{i=1}^{5} \beta_i CG_{t-1} + \beta_6 PERF_{t-1} + \beta_7 BNKSIZE_t + \beta_8 DIV_t$$

$$+ \beta_9 TICAP_t + \beta_{10} DUAL_t + \beta_{11} BTYPE_t + \beta_{12} BLOCK_t + \beta_{13} CRISIS$$

$$+ \varepsilon_t \qquad \qquad (6)$$

Among the exogenous variable in the fifth equation are: banks size, as the greater visibility of large firms may induce more board seats devoted to representatives of the public, for example the regulation and depositor interests. OUTDIR is also expected to depend negatively on the dual capacity CEODUAL, which might lead to a concentration of power and the election of less independent board members (Shivdasani and Yermack, 1999; Beiner et al. 2006).

### 4.2.7 Executive Compensation

The final equation (3.7) shows that the executive compensation is a function of other corporate governance mechanisms and instrumental variables, along with bank performance (Mehran, 1995; Rediker and Seth, 1995; Talley and Johnsen, 2004; Ozkan, 2011; Aguilera et al., 2008; Fahlenbrach, 2008; Ward et al. 2009). These choices will also depend on other factors that are related to a large number of observable and unobservable firm characteristics that arise due to differences in the contracting environment (Palia, 2001), the markets in which the firm operates, and the characteristics of the CEO (Agrawal and Knoeber, 1996). These other factors are treated as exogenous both for tractability and to maintain focus on the endogeneity of the six corporate governance mechanisms.

A higher bank performance is expected to lead to higher compensation. Larger shareholders are expected to lead to higher pay as it provides the executives with more leverage to serve their own interests of higher levels of wealth, while more debt holders are expected to lead to lower executives' pay (as in John and John, 1993; John et al., 2010). Managerial ownership and board size are expected to lead to higher pay, while more outside directors in the board are assumed to lead to more monitoring and to have a negative influence on executive compensation packages.

$$TECOMP_t = \beta_0 + \sum_{i=1}^{5} \beta_i CG_{t-1} + \beta_6 PERF_{t-1} + \beta_7 BNKSIZE_t + \beta_8 DIV_t$$

$$+ \beta_9 TICAP_t + \beta_{10} DUAL_t + \beta_{11} BTYPE_t + \beta_{12} MTBV_t + \beta_{13} CRISIS$$

$$+ \varepsilon_t \qquad\qquad (7)$$

The exogenous variables in the last equation are: BNKSIZE and CEODUAL are both expected to have a positive influence on executive compensation packages due to greater diversification and the job complexity. A positive relationship between compensation TECOMP and the capital ratio TCAPR is expected to exist because compensation creates a contingent liability for the firm that needs to be funded in advance (Mehran and Rosenberg, 2008). Finally, a negative relationship between TECOMP and growth opportunities (MTBV) as the compensation is expected to be lower of banks with higher growth opportunities. Finally, a negative relationship between TECOMP and financial crisis (CRISIS) is also expected. Table 3 reports descriptive statistics for the variables used in the empirical analysis in the present study.

### 5. Empirical Results

To account for a possible interdependence between the corporate governance mechanisms and executive compensation, we estimate the simultaneous equations framework developed in equations (1)–(7) using 3SLS. The first step, however, is to make sure that 3SLS is an appropriate methodology. To do this, we test for the endogeneity of the corporate governance mechanisms and bank performance using a Durbin-Wu-Hausman test (e.g., Hausman, 1978). Applied to the performance (EPS) equation (1), the Durbin-Wu-Hausman test rejects the null hypothesis of no endogeneity at the 1% level. We conclude that OLS may lead to biased and inconsistent estimates in our sample, (see Beiner, 2006)[7]. Table 4 presents the simultaneous

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[7] The Durbin-Wu-Hausman test involves a two-stage procedure: In the first stage, each dependent variable is regressed on all exogenous variables in the system using OLS regression, where bank performance (EPS) is the dependant variable and the corporate governance as independent variable along with the rest of the exogenous variables (IV) included in the original equation. Then, the predicted (residuals) values for the bank performance (EPS) are calculated using the estimated coefficients from these first-stage regressions. In the second stage, each dependent variable is regressed on the exogenous variables in the respective equation by run the same equation including the residuals from the first OLS estimation (the right-hand-side dependent variables as bank performance (EPS), and the predicted (residuals) values of the original equation in the left-hand-side along with the rest of independent variables without the exogenous variables which been included in the original equation. The significance of each predicted right-hand-side dependent variable is tested using a t-test (F-Test) with the null hypothesis of no endogeneity. If a predicted dependent variable has significant explanatory power, the dependent

system of equations results by using 3SLS regressions estimation method of the executive compensation, corporate governance and bank characteristics on our first chosen measure of performance (earnings per share, EPS) and yields several key findings.

The first variable of interest is executive compensation and its association with bank performance. As discussed earlier in the paper, the standard agency framework considers executive compensation as an efficient means of aligning executive interests more closely with shareholders' interest. Accordingly, managers should be rewarded for performance and other factors should not be a significant determinant of compensation (Jensen and Meckling, 1976). Our results suggest that this does not apply in the context of European banks as there is no evidence of a contemporaneous relationship between executives' compensation and bank performance. The executive compensation is negatively related – albeit not significantly – to past and future bank performance (EPS), as shown in Columns (1) and (7) of Table 4. Essentially, it appears that banks' executives were rewarded in future periods regardless of the performance status in the current period; similarly, the pay in the current period does not appear to be related with the performance status in the future.

Overall, evidence suggests that there is no support that bank performance is the one of the determinant factors of executive compensation in European banks; in contrast, the results reveal that banks compensate their executives regardless the financial performance status. These findings are consistent with those by Doucouliagos et al. (2007) who also have found evidence of a weak relationship between the executive compensation and the financial performance in the Australian banking industry over the period 1992-2005. In the same way, Beltratti and Stulz (2011), found no evidence that banks with CEOs whose incentives were better aligned with the interests of their shareholders performed better during the 2007-09 crisis and provided some evidence that these banks actually performed worse both in terms of stock returns and in terms of accounting return on equity for 164 large banks operating in 32 countries including Europe before the 2007-09 crisis.

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variable is presumed to be endogenous (if the coefficient on the residuals is significant then the endogeneity is existing). For example, it is important to note that in our performance equation (3.1) the predicted dependent variables of the six governance mechanisms including executive compensation are jointly significant at the 1% level, indicating that at least one of the mechanisms is endogenous. The existence of endogeneity among bank performance, executive compensation and corporate governance variables is justified the use of 3SLS to account for a possible endogeneity issues.

Indeed the impact of executive pay on performance could differ due to the regulatory environment and the unique nature of the banking business. The presence of depository insurance may reduce the actual level of monitoring by regulators and shareholders, enabling bank managers to maximize their compensation notwithstanding of performance.

Tables 4 also suggests that the major factors in explaining executive pay levels in European banks regardless of economic performance are board size, managerial ownership, bank size, Total capital ratio and dividends status. Executive pay appears lower when there are more outside directors on the board and better growth opportunities. Furthermore, the results do not support the widespread hypothesis of a positive relationship between corporate governance and bank performance. For example, board size (BODS) is significant and positively related to executive pay at the 10% level of significance, while it has a significant negative impact on financial performance again at the 10% level of significance (Columns (1) and (6) of Table 3.3). These findings are consistent with Jensen (1993) and Yermack (1996)'s argument that a larger board is a sign of weak corporate governance and poor performance because of coordination and communication problems which undermine the effectiveness of larger boards. Other studies that have reported a negative relationship between board size and performance are: De Andres et al. (2005) for an international sample of 450 non-financial firms in Western Europe and North America; Staikouras et al. (2007) who studied a sample of 58 large European banks over the period 2002-2004; Cheng (2008) for a sample of 1,252 US firms over the period 1996–2004; and, finally, Guest (2009) for a large sample of 2,746 UK listed non-financial firms over 1981-2002.

Our results also show that banks with larger boards pay their executives significantly more than banks with smaller boards (Column (5) in Table 4). Similarly, Cores, et al. (1999) find that compensation is an increasing function of board size for 205 publicly traded US firms in 1982-1984; and, more recently, Ozkan (2009) argues that poor monitoring and disciplining of managers in large boards will result managerial expropriation through excessive executive pay.

Managerial ownership (MOWNR) has also a positive impact on executive pay at 1% level of significance but no association with financial performance (Columns (1) and (4) of Table 4). Consistent with this finding, Chung and Pruitt (1996) find that the executive stock ownership and executive compensation are jointly determined. However, there is no association between managerial ownership and bank performance.

The percentage of outside directors on the board (OUTDIR) has a negative and statistically significant impact on executive pay at 1 % significance level, but no association with financial performance as shown by an insignificant effect on bank performance (Columns (1) and (3) of Table 4). Given the possible simultaneous nature of the relationship, it may be that poor performance resulted in an increase in the number of outside directors rather than being the cause of the poor performance, as shown in previous studies which find no association between the outside directors and firm performance such as, among others, Yermack (1996); Hermalin and Weisbach (1991); Agrawal and Knoeber (1996); Yermack (1996); Bhagat and Black (2001); Beiner et al. (2004); and Staikouras et al. (2007).

Interestingly we find a negative and statistically significantly relationship between proportion of outside directors and executive compensation (Column (6)). This result possibly suggests the ineffectiveness of their advisory role rather than the monitoring role. The advisory role of outside directors is seems to be undermined although they put more emphasis on the executive's compensation contracts and monitoring the management. Until recently, one of the the main criticism of outsider directors in banks is that they are normally people from other industries without a background in financial sectors and no significant experience in the banking business; For example, they do not know enough about the financial industry, they could not tell how derivatives or collateralised debt obligations works, and many of them lack financial background and sit on highly technical board committees. In these cases, it is very easy for skilled, charismatic CEO to persuade them that whatever the company was doing was good business (Guerrera and Thal Larsen, 2008).

This view also receives some indirect support from Hau and Thum (2009), who find that bank losses in 2007-2008 for a sample of 29 large German banks (assets above € 40 billion) were higher in cases where boards had less business experience, specifically financial experience. In addition, Adams (2009) finds that director pay is significantly lower at US banks compared to overseas banks because of the emphasis on director independence (which effectively excludes people with past executive experience in banks). However, Bhagat and Black (2000) also have provided evidence that firms suffering from low profitability respond by increasing the independence of their board of directors.

The leverage (LEVE) has no significant impact on executive compensation levels; it is negative but not significantly related to executive compensation, while banks with higher

leverage exhibit worse performance at 1% level of significance (Columns (1) and (3) of Table 4). This finding suggests that debt holders are not active monitors of bank managers which is likely due to the presence of depository insurance that may remove any incentive for insured depositors to monitor bank directors because their funds are protected and their investment is guaranteed regardless of the outcomes of the investment strategies that the banks select (Cooper, 2009; Crawford et al., 1995; Macey and O'Hara, 2003). These results support similar empirical finding which suggest that a debt-based capital structure is associated with worse future financial performance (Jensen 1986; Beiner et al. 2006; Larcker et al., 2007, John et al., 2010 and Hartzell and Starks; 2003; Grove et al., 2009).

Additionally, the coefficients on the exogenous and bank characteristics variables generally have the predicted signs, are often statistically significant and they broadly confirm the results from earlier studies. First, bank size (BNKSIZE) as measured by natural log of total asset is positive and highly significant in relation to both bank performance (Column (1)) and executive compensation (Column (7) of Table 4). Larger banks appear to offer more compensation to their executive directors and continue its strong positive association with bank performance (e.g. Mehran, 2004). Second, the capital ratio (TCAPR) is positive and significantly related to executive compensation at 1% significance level. Mehran and Rosenberg (2008) show that increases in compensation especially stock options grants result in increased bank capital for a sample of 549 bank-years for publicly traded banks from 1992 to 2002, because compensation create a contingent liability for the firm that needs to be funded in advance. In contrast, capital ratio is has no significant impact on financial performance .Third, evidence suggests that CEO duality (CEODUAL) has a negative relationship with bank performance at 1% level of significance, but there is no indication of an association with executive pay (Columns (1) and (7) of Table 4). Therefore, we are supporting the view that the role of chairman and CEO should be exercised by two different persons. It is argued that there is conflict of interest and higher agency costs when a CEO combining both the positions; CEO duality may weaken the board monitoring and control function, lead to concentration of power, lack of accountability and ultimately result in poor performance (Fama and Jensen, 1983; Jensen, 1993; Berg and Smith, 1978; Brickley et. al., 1997). Similar negative relationships between CEO duality and banking performance has been found in Pi and Timme (1993) for a sample of US banks over the 1987-1990 period. Fourth, the coefficient of the board type (BTYPE) presents a positive and significant relationship

with performance at the 5% level of significance, thus suggesting that countries belonging to the two-tier board systems were performing better than their one-tier board counterparts. Finally, the dividends status dummy (DIV) has a positive significant influence on the level of executive compensation in next year at 5% level of significant.

Apart from the executive compensation variable, the findings reported in Table 4 reveal interesting interdependencies (either complementarities or substitutabilities) between the different corporate governance mechanisms which strongly underscore the advantage of a simultaneous equations framework to investigate their influence on executive compensation and bank performance. Consistent, to some extent, with the governance mechanisms being complementarity, the reported results in Columns (1)-(7) of Table 4 show positive and statistically significant relationships (complementarities) between outside directors (OUTDIR) and each of large shareholders (LSHRH), managerial ownership (MOWNR) and board size (BSIZE). This suggests that banks with high levels of large shareholders have on average higher proportions of independent directors in their boards (Columns (2) and (6) of Table 4). Interestingly, as the number of large shareholders increases, their representation in the board of directors' increase and therefore board size also increases. Hence, there is also positive and statistically significant relationship between board size and outside directors (Columns (5) and (6) of Table 4). Using a sample of banking firm data that spans 34 years, Adams and Mehran (2012) provide evidence that increases in board size due to additions of directors with subsidiary directorships may add value as bank complexity increases. Banks with higher proportions of outside directors on their boards have also higher equity ownership by managers and directors (Column (4) of Table 4). According to Leung et al. (2004), when managerial ownership is higher, the controlling owners will have more voting power or influence to decide on structure of the outside directors on the board. Consequently, this will be significant in appointing independent non-executive directors. The significant relationship between leverage and outside directors (Columns (6) and (4) of Table 4) suggests that highly leveraged banks tend to encourage more monitoring by outside directors.

Bank size is the most significant variable with corporate governance, as well executive compensation and banks performance. Bank size continues its strong positive association with leverage, board size and proportion of outside directors' variables, and is negatively associated to managerial ownerships. Larger banks tend to have larger boards reflecting the many subsidiaries

owned, and when the board gets larger there is more need for outside directors. Bank size has also a negative association with managerial ownership (MOWNR), which is an expected result and suggests that managerial ownership is lower in bigger banks. Because managerial ownership is likely to be lower when the costs of holding an underdiversified portfolio are higher (e.g., Chung and Pruitt, 1996; Dyck and Zingales, 2004), Demsetz (1983) suggests a negative relation between firm size and stock ownership because that will limit their personal wealth to the firm. The Total capital ratio (TCAPR) ratio variable is positive and statistically significant with outside directors at 1% significance level while it is negative and statistically significant with managerial ownership at 5% level. Other interesting relationships include: the positive and statistically significant (at 1% level) relationship between CEO/Chair duality dummy (CEODUAL) and outside directors and the negative relationship with board size.

Board type (BTYPE) as dummy variable is positive and statistically significant with both large shareholders (LSHRH) and board size (BODSIZE) at 1% level of significance, indicating that large shareholders are and larger boards are more pronounced in two-tier board systems while the outside directors are lowers in two-tier board. The availability of internal funds, as measured by the dividends status (DIV) that for the aims of this study, is included as a dummy variable, and provides an alternative to debt financing, is positive and significantly related to the debt holders at 5% level; while it is negatively related to leverage. Indeed the debt holders (DEBTH) variable is positive and statistically significant with leverage and large shareholders, while is negatively related with managerial ownership (Table 4). This hints the possible conflicts of interest between these two interest groups. These results are consistent to some extent with the governance mechanisms being substitutes. Banks with block owners sitting on the board have smaller boards, as shown by the negative relationship with the variable BSIZE at 1% level of significance. This suggests that banks with controlling large shareholders sitting on the board are less likely to have more board members in the board.

Table 4 also includes CRISIS as exogenous variable into simultaneous equations regressions a dummy which is equal to zero prior to 2007 and one afterwards to examine whether the compensation and performance relation differs following the recent financial crisis. The results in Table 4 clearly show that the financial crisis did not seem to have a significant impact on the variables of greatest interest in our analysis, namely bank performance and total compensation levels.

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### 5.1 Alternative model specifications: testing ROA and SRET

For robustness we also re-run our models using two alternative performance measures: an accounting measure, the Return on Assets (ROA) and a market-based measure, the annual share return (SRET). Results are reported in Table 5 and 6, respectively. Consistently with the finding for earning per share (EPS) reported in Table 4, the compensation still has its insignificant negative relationship with ROA and SRET (Columns (1) and (7) of Tables 5 and 6).

Concerning the other relationships, overall, it is possible to observe that despite a few minor differences with regard to the magnitude of some of the coefficients reported in Tables 5 and 6, the results are essentially similar to those reported in Table 3.3 where EPS is used as dependent variable. For instance, total executive compensation (TECOMP) is only significantly negatively related to non-executive directors (OUTDIR) at 1% level of significance, while managerial ownership (MOWNR) and board size (BSIZE) show the same positive and statistically significant relationship with the executive compensation. Turning to the exogenous variables, the coefficients of bank size (BSIZE) remain significant and positively related to compensation and board size, whereas board size is still negatively related to performance. Finally, our CRISIS dummy does not seem to have affected the key relationships in our study.

Overall, using alternative measures of bank performance seems to confirm the same results as those displayed in Table 4 thus suggesting that our results are fairly robust.

### 6. Discussion and Conclusions

It is well-known that banks' 'specialness' derives from their own special nature and features, and include, *inter alia*, the capital structure, the liquidity production role and the regulatory regime that banks are subject to (Macey and O'Hara, 2003). Further, banks have a crucial role in the economy, in the transmission mechanism of monetary policy, in the payment system and, more generally, for the stability of financial systems. Nonetheless most major governance and management policies employed in banking (for instance, how the board of directors is organised and how top bank managers are paid, etc.) are broadly in line with non-financial firms. In recent years, a new consensus has been developing that recognises that because banks differ substantially from other firms, their corporate governance should be given separate attention.

This paper adds to the current banking literature by identifying the extent to which corporate governance mechanisms, particularly executive pay, are key factors in explaining the differences in the performance of banks. This study utilises manually collected data on the executive compensation and corporate governance variables over the period ranging from 2000 to 2010 for 67 publicly-listed commercial and bank-holding companies operating in 13 European countries. The methodology addresses the potential endogeneity problems which may arise from the possible simultaneous use of executive pay and other corporate governance mechanisms (Chung and Pruitt, 1996; Bhagat and Black, 2002; Black et al., 2006; Wintoki et al., 2012) using a system of seven simultaneous equations in order to accurately identify the impact of executive pay on firm performance by using the Three-Stage Least Squares (3SLS) estimation method. Accordingly, each of the large shareholders, debt holders, managerial ownership, board size and the presence of outside directors along with the bank performance are simultaneously estimated. The system treats bank performance as well as corporate governance mechanisms, including the executive compensation as endogenous, and it allows each of them to affect all the others in order to capture possible substitution effects.

Based on the results of the simultaneous system of equations and the 3SLS estimation method, the finding indicates an absence of a contemporaneous relationship between executive pay and bank performance as measured by earning per share (EPS), return on assets (ROA) and annual share return (SRT). In contrast, the results reveal that banks compensate their executives regardless of financial performance. The major factors in explaining executive pay levels in European banks are bank size, managerial ownership, board size, total capital ratio and dividends status. Executive pay level is lower when there are more independent (outside) directors on the board and higher growth opportunities. Furthermore, the results do not support the widespread hypothesis of a positive relationship between various corporate governance arrangements and bank performance.

As the benefit of using a simultaneous system of equations, the results further reveal significant interdependencies, whether complementarity or substitutability, among executive compensation, corporate governance and bank performance variables. For example, banks with a large shareholder tend to have large board and more outside directors sitting on their board. While the block owner who already sitting in the board to have less outside directors. Banks with higher debt-holder have lower levels of managerial ownership.

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Given the lack of support to the agency theory which appears to have partial explanatory power in investigating the performance implications of corporate governance at banks, we argue that banks are special and may need a different set of pay paradigms that account for leverage, regulation, and deposit insurance in a coherent and incentive-compatible framework. The findings highlight the need to incorporate alternative or multiple theories beyond agency theory in corporate governance research to understand the performance implications of corporate governance at banks. The findings also have important policy implications and offer contributions to regulators, especially for ongoing reforms of executive compensation. We support the current policy reforms that compensation structures should be design to reward for performance rather than general firm-specific and the major part of executive compensation must be deferred over a period of at least 3 – 5 years and must be subject to performance criteria and performance adjustment (clawback) may apply if necessary. We also support the strong push to splitting up the roles of CEO and chairman titles.

# References

Adams, R. and Mehran, H. (2012), "Bank board structure and performance: Evidence for large bank holding companies". *Journal of Financial Intermediation*, Vol.21(2): 243-267.

Adams, R. and H. Mehran (2003), "Is Corporate Governance Different for Bank Holding Companies?", *Economic Policy Review*, Vol. 13(1): 1-5

Agrawal, A. and Knoeber, C. (1996), "Firm performance and mechanisms to control agency problems between managers and shareholders", *Journal of Financial and Quantitative Analysis*, Vol. 31(3): 377-397.

Agrawal, A. and Knoeber, C. (2012), "Corporate Governance and Firm Performance", Oxford Handbook in Managerial Economics, Christopher R. Thomas, William F. Shughart II, eds, Oxford University Press. Available at SSRN: http://ssrn.com/abstract=2024764

Aguilera, R., Filatotchev I., Gospel H., and Jackson, G. (2008), "An organizational approach to comparative corporate governance: Costs, contingencies, and complementarities'. Organization Science, Vol. 19(3): 475-492.

Angbazo L and Narayanan, R. (1997), "Top Management Compensation and the Structure of the Board of Directors in Commercial Banks". *European Finance Review*, Vol. 1. Issue 2, pp. 239-259.

Bebchuk L, and Weisbach, H. (2010), "The state of corporate governance research", *The Review* of *Financial Studies*, Vol. 23(3):939-961.

Becher, D., Campbell, T. and Frye, M. (2005), "Incentive Compensation for Bank Directors: The Impact of Deregulation", *The Journal of Business*, Vol. 78(5): 1753-1778.

Beiner S, Drobetz W, Schmid, M, and Zimmermann, H. (2006), "An integrated framework of corporate governance and firm valuation", *European Financial Management,* Vol. 12(2): 249–283.

Beltratti, A. and Stultz, R. (2012), "The Credit Crisis around the Globe: Why Did Some Banks Perform Better?", *Journal of Finance Economics*, Vol. 105(1):1-17. 205

Berg, S. and Smith, S. (1978), "CEO and Board Chairman: A Quantitative Study of Dual versus Unitary Board Leadership", *Directors and Boards,* Vol. 3(spring): 34-39.

Berle, A., and Means, G. (1932), "The Modern Corporation and Private Property", New Brunswick, N.J., U.S.A.: Transaction Publishers, revised edition (1991).

Bhagat, S. and Bolton, B. (2008), "Corporate Governance and Firm Performance", *Journal of Corporate Finance*, Vol. 14(3): 257-273.

Bhagat, S., Black, B., (2002), "The non-correlation between board independence and long term firm performance", *Journal of Corporation Law*, Vol. 27 (winter): 231–274.

Black, B. Jang, H. and Kim, W. (2006), "Does Corporate Governance Affect Firms' Market Values? Evidence from Korea," Journal of Law, Economics, & Organization, Vol. 22(2): pp. 366-413.

Boyd, B. (1994), "Board control and CEO compensation", *Strategic Management Journal*, Vol. 15(5): pages 335–344.

Brickley, J. Coles, J. and Jarrell, G. (1997), "Leadership Structure: Separating the CEO and Chairman of the Board", Journal of Corporate Finance, Vol. 3(3), pp. 189-220.

Chen, C., Barry, L. and Yi, B. (2008), "CEO duality and firm performance- an endogenous Issue", *Corporate Ownership and Control*, Vol. 6 (1), pp.58-65

Chen,Y. and Ma, Y. (2011), "Revisiting the risk-taking effect of executive stock options on firm performance", *Journal of Business Research,* Vol. 64(6):640-648.

Cheng, S., Evans, J. and Nagarajan, N. (2008), "Board size and firm performance: the moderating effects of the market for corporate control", *Review of Quantitative Financial Accounting*, 31(2): 121-145.

Chung, K. and Pruitt, S. (1996), "Executive ownership, corporate value, and executive compensation: A unifying framework", *Journal of Banking and Finance*, Vol. 20(7): 1135-1159.

Claessens, S. and Yurtoglu, B. (2013), "Corporate Governance in Emerging Markets: A Survey", *Emerging Markets Review,* Vol. 15(C): 1-33.

Coles, J., Daniel, N. and Naveen, L. (2006), "Managerial incentives and risk-taking", *Journal of Financial Economics*, Vol. 79(2): 431-68.

Cooper, E. (2009), "Monitoring and governance of private banks", The Quarterly Review of Economics and Finance, Vol. 49(2): 253–264

Crawford, A. Ezzell, J. and Miles, J. (1995), "Bank CEO pay-performance relations and the effects of deregulation", *Journal of Business,* Vol. 68(2) .pp 231-256.

Cronqvist, H., Fahlenbrach, R., (2009), "Large shareholders and corporate policies", *Review of Financial Studies*, Vol. 22 (10): 3941-3976.

Cuñat, V. and Guadalupe, M. (2009), "Executive compensation and competition in the banking and financial sectors", *Journal of Banking and Finance*, Vol. 33(3): 495–504.

De Andres, P., Azofra, V., & Lopez, F. (2005), "Corporate boards in OECD countries: Size composition, functioning and effectiveness", *Corporate Governance: An International Review*, 13(2): 197-210.

Demsetz, H. (1983), "The structure of ownership and the theory of the firm", *Journal of Law and Economics,* 26(2): 375-390.

Devers, C. Cannella, A. Reilly, G. and Yoder, M. (2007), "Executive Compensation: A Multidisciplinary Review of Recent Developments", *Journal of Management,* Vol. 33(6), pp. 1016-1077.

Dyck, A. and Zingales, L. (2004), "Private Benefits of Control: An International Comparison", *Journal of Finance, American Finance Association*, Vol. 59(2): 537-600

Fahlenbrach, R. (2009), "Shareholder rights, boards, and CEO compensation", Review of Finance, Vol. 13(1): 81-113.

Fahlenbrach, R. and Stulz, R. (2011), "Bank CEO Incentives and the credit crisis'. Journal of Financial Economics, Vol. 99(1); 11–26.

Faleye, O. (2007), "Does one hat fit all? The case of corporate leadership structure", *Journal of Management and Governance*, 13(3):239-259.

Fama, E. (1980), "Agency Problems and the Theory of the Firm", *Journal of Political Economy*, Vol. 88(2): 288-307.

Fama, E. and Jensen, M. (1983), "Separation of ownership and control", *Journal of Law and Economics*, Vol. 26(2) pp.301-26.

Florackis, C. (2005), "Internal corporate governance mechanisms and corporate performance: evidence for UK firms. Applied Financial Economics Letters, Vol. 1(4): 211-216

Frydman, C. and Jenter, D. (2010), "CEO Compensation", *Annual Review of Financial Economics, Annual Reviews*, Vol. 2(1), 75-102.

Gillan, S., Hartzell, J. and Starks, L. (2003), "Explaining Corporate Governance: Boards, Bylaws, and Charter Provisions", Weinberg Center for Corporate Governance, Working Paper No. 2003-03. Available at SSRN: http://ssrn.com/abstract=442740 or http://dx.doi.org/10.2139/ssrn.442740 210

Grove, H., Patelli, L. Victoravich, L. and Xu, P. (2011), "Corporate Governance and Performance in the Wake of the Financial Crisis: Evidence from US Commercial Banks", *Corporate Governance: An International Review*, Vol. 19, (5): 418–436.

Guerrera, F. and Thal-Larsen, P. (2008),"Gone by the Board: Why the directors of big banks failed to spot credit risks", Financial Times, June 26th. Financial Times, 26 June. Avariable at: http://www.ft.com/cms/s/0/6e66fe18-42e8-11dd-81d0-0000779fd2ac.html

Guest, P (2009), "The impact of board size on firm performance: evidence from the UK", *The European Journal of Finance*, Vol. 15(4):385–404.

Hart, O. and John, M. (1995), "Debt and seniority: An analysis of the role of hard claims in constraining management", *American Economic Review,* Vol. 85(3):567-585.

Hartzell, J and Starks, L. (2003), "*Institutional Investors and Executive Compensation. Journal of Finance*", Vol. 58(6):2351-2374.

Hau, H. and Thum, M. (2009). Subprime crisis and board (in-) competence: Private vs. public banks in Germany. Economic Policy, 24 (60), 701–751.

Houston, J. and James, C. (1995), "CEO compensation and bank risk- is compensation in banking structured to promote risk taking?' Journal of Monetary Economics, Vol. 36(2):405–432.

Hubbard, R. and Palia, D. (1995) "Executive pay and performance: evidence from the US banking industry", *Journal of* Financial Economics, Vol. 39(1): 105–130

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

Jensen, M. and Meckling, W. (1976), "The Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure", *Journal of Financial Economics*, Vol. 3(4): 305- 360

Jensen M. (1993), "The modern industrial revolution, exit, and the failure of internal control systems", *The Journal of Finance*, Vol. 48(3): 831-880.

John, K. and Qian, Y. (2003), "Incentive features in CEO compensation in the banking industry". FRBNY Economic Policy Review, Federal Reserve Bank of New York in its journal Economic Policy Review, Vol. 9 (April): 109-121. 212

John, K., Saunders, A. and Senbet, L. (2000), "A theory of bank regulation & management compensation", *Review of Financial Studies*, Vol. 13(1):95-125

John, T. and John, K., (1993), "Top-management compensation and capital structure, *The Journal of Finance,* Vol. 48(3): 949-974.

John K, Mehran H, and Qian Y (2010), "Outside monitoring and CEO compensation in the banking industry", *Journal of Corporate Finance*, Vol. 16(4): 383–399

Joyce, B. (2001), "Return and reward: Bank performance and CEO compensation", American Business Review, Vol. 19(2):93-99.

Kerr, J. and Bettis, R. (1987) "Board of Directors, Top Management Compensation, and Shareholder Returns", *Academy of Management Journal*, Vol. 30(4): 645-664.

Krause, R. (2009), "Does "Long-Term Compensation" Make CEOs Think Long-Term? A Study of CEO Compensation in the Commercial Banking Industry", *Michigan Journal of Business*, Vol. 2(2): 77–103.

Lambert, R. A., and D. F. Larcker. 1987. An Analysis of the use of Accounting and Market Measures of Performance in Executive Compensation Contracts. *Journal of Accounting Research* 25:85-125. 213

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 1997. Legal determinants of external finance. Journal of Finance, 52(3), 1131-1150.

Larcker, D. Richardson, S. and Tuna, I. (2007), "Corporate Governance, Accounting Outcomes, and Organizational Performance", *The Accounting Review*, Vol. 82(4): 963-1008.

Leung, S. and Horwitz B. (2004), "Director Ownership and Voluntary Segment Disclosure: Hong Kong Evidence", *Journal of International Financial Management and Accounting*, Vol. 15(3): 235–260.

Macey, J. and O"Hara, M. (2003), "The Corporate Governance of Banks", FRBNY *Economic Policy Review*, Vol. 9(1):91-107.

Magnan, M. and St-Onge, S. (1997), "Bank Performance and executive compensation: A managerial discretion perspective", *Strategic Management Journal*, Vol. 18(7):573-581.

McKnight P. and Weir, C. (2009), "Agency costs, corporate governance mechanisms and ownership structure in large UK publicly quoted companies: A panel data analyses", *The Quarterly Review of Economics and Finance*, Vol. 49(2): 139–158

Mehran, H. and Rosenberg, J. (2007), "The Effect of Employee Stock Options on Bank Investment Choice, Borrowing, and Capital" FRB of New York Staff Report No. 305. Available at SSRN: *http://ssrn.com/abstract=1022972 or http://dx.doi.org/10.2139/ssrn.1022972* 214

Mehran H. (1995), "Executive compensation structure, ownership, and firm performance", *Journal of Financial Economics*, Vol. 38(2):163-184.

Mikhail, W.M. (1975), "A Comparative Monte Carlo Study of the Properties of Economic Estimators," *Journal of the American Statistical Association*, 70, 94–104.

Mintz, S. (2005), "Corporate Governance in an International Context: Legal Systems, Financing Patterns and Cultural Variables", *Corporate Governance,* Vol. 13(6): 582-597.

Murphy, K. (1985), "Corporate performance and managerial remuneration: an empirical analysis", *Journal Accounting Economics,* Vol. 7(1-3):11-42.

Myers, S. (1977), "Determinants of Corporate Borrowing," *Journal of Financial Economics*, Vol. 5(2):147–175.

Ozkan, N. (2011), "CEO Compensation and Firm Performance: an Empirical Investigation of UK Panel Data", *European Financial management*, Vol. 17(2): 260 – 285.

Palia, D. (2001), "the endogeneity of managerial compensation in firm valuation: A solution", *Review of Financial Studies*, Vol. 14 (3); 735-764. 215

Paul, J. (1992), "On the efficiency of stock-based compensation", *Review of Financial Studies*, Vol. 5 (3):471-502.

Pi, L. and Timme, S. (1993), "Corporate Control and Bank Efficiency", *Journal of Banking and Finance,* Vol. 17(2): 515-530.

Rediker, K. and Seth, A. (1995) "Boards of directors and substitution effects of alternative Governance Mechanisms", *Strategic Management Journal*, Vol. 16, No. (2): 85-99.

Shivdasani, A. and Yermack, D. (1999), "CEO involvement in the selection of new board members: An empirical analysis", *Journal of Finance*, Vol. 54(5): 829-1854. 216

Shleifer, A. and Vishny, R. (1997), "A Survey of Corporate Governance", *Journal of Finance*, Vol. 52(2):737-783

Sierra, G., Talmor, E. and Wallace, S. (2006), "An Examination of Multiple Governance Forces within Bank Holding Companies", *Journal of Financial Service Research,* Vol. 29(2): 105 -123.

Singh, M. and Davidson III, W. N. (2003) agency Costs, ownership Structure and Corporate Governance Mechanisms, *Journal of Banking and Finance*, Vol. (27): 793-816.

Sloan, R. (1993), "An examination of the role of accounting earnings in top executive compensation contracts", *Journal of Accounting and Economics*, Vol.16, (1-3): 55-100.

Staikouras, K., Staikouras, K. and Agoraki, K. (2007), "The effect of board size and composition on European bank performance", *European Journal of Law and Economics*, Vol. 23(1):1-27.

Stulz, R. (1990), "Managerial discretion and optimal financing policies", Journal of Financial Economics, Vol. 26(1):3-27.

Talley, E. and Johnsen, G. (2004), "Corporate Governance, Executive Compensation and Securities Litigation" USC Law School, Olin Research Paper No. 04-7; and USC CLEO Research Paper No. C04-4. Available at SSRN: http://ssrn.com/abstract=536963

Tu, Y., Lai, W. and Chou, H. (2007), "Analysis of Board Structure, Corporate Value and Financial Policy", *Journal of Marine Science and Technology*, Vol. 15(4): 295-306.

Tung, F., and X. Wang. (2011), "Bank CEOs, Inside Debt Compensation, and the Global Financial Crisis." Mimeo. Boston University.

Ward, A., Brown, J. and Rodriguez, D (2009), "Governance Bundles, Firm Performance, and the Substitutability and Complementarity of Governance Mechanisms", *Corporate Governance: An International Review*, Vol. 17(5): 646-660.

Weir, C., Laing, D., 2000. The performance-governance relationship: the effects of Cadbury compliance on UK quoted companies. Journal of Management and Governance 4, 265-281

Wintoki, M., Linck, J. and Netter, J. (2012), "Endogeneity and the dynamics of internal corporate governance", *Journal of Financial Economics,* Vol. 105 (3), 581-606.

Wright P., Kroll, M., and Elenkov, D. (2002), "Acquisition Returns, Increase in Firm Size, and Chief Executive Officer Compensation: The Moderating Role of Monitoring", *Academy of Management Journal*, Vol. 45(3): 599-608.

Yermack, D. (1996), "Higher market valuation for firms with small board of directors", *Journal of Finance*, Vol. 40(2): 185-211.

Yu, T. and Zhang, M. (2004), "Financial Performance vs. CEO Compensation, Recent Evidence from the Banking Industry", Journal of Accounting and Finance Research, Vol. 2(1):1-9.

Zellner, A. and Theil, H., (1962). "Three Stage Least Squares: Simultaneous Estimation of Simultaneous Equations," *Econometrica*, Vol. 30(2):63-68.

## Table 1

### Overview of the sample by country and by year

Panel A: Number of executive compensation data by country

| Country | # of Banks | # of Observations | % of Sample |
|---|---|---|---|
| Germany | 9 | 69 | 12.64% |
| France | 5 | 39 | 7.14% |
| UK | 9 | 80 | 14.65% |
| Italy | 13 | 141 | 25.82% |
| Spain | 9 | 58 | 10.62% |
| Portugal | 6 | 28 | 5.13% |
| Denmark | 3 | 30 | 5.49% |
| Ireland | 3 | 31 | 5.68% |
| Belgium | 2 | 20 | 3.66% |
| Austria | 2 | 16 | 2.93% |
| Netherlands | 2 | 13 | 2.38% |
| Sweden | 2 | 12 | 2.20% |
| Finland | 2 | 9 | 1.65% |
| Total | 67 | 564 | 100.00% |

Panel B: Distribution of bank-year observations by year

| Year | # of Observations | % of sample |
|---|---|---|
| 2000 | 22 | 4.03% |
| 2001 | 32 | 5.86% |
| 2002 | 39 | 7.14% |
| 2003 | 43 | 7.88% |
| 2004 | 52 | 9.52% |
| 2005 | 56 | 10.26% |
| 2006 | 60 | 10.99% |
| 2007 | 62 | 11.36% |
| 2008 | 61 | 11.17% |
| 2009 | 60 | 10.99% |
| 2010 | 59 | 10.81% |
| Total | 546 | 100.00% |

## Table 2 Variables Description

| | **Endogenous Variables** |
|---|---|
| **PERF** | Accounting and market-based measures of <u>performance</u>, measured alternatively as : |
| | **EPS:** Earnings per share is the net income divided by shares outstanding. |
| | **SRET:** The annual shares return is the natural logarithmic of the ratio of equity return series ($R_{it} = ln (P_{it} - P_{it}-1)/(P_{it}-1)$) |
| | **ROA:** Return on Assets is operating income divided by end of year total assets. |
| **LSHRH** | The percentage sum of stakes of all <u>large shareholders</u> with equity ownership greater than 3% and measures the voting-power relative to the shares ownership of non-management shareholders. |
| **LEVE** | Bank leverage calculated as the ratio of <u>total debt to total assets.</u> |
| **MOWNR** | Managerial ownership is the percentage of the sum of common shares owned personally by members of the management board <u>(direct ownership)</u> scaled by total shares outstanding. Note: indirect share ownership owned by board members on behalf of large shareholders is excluded. |
| **BODSIZE** | It is the natural log of the <u>number of board of director members (scaled by total assets)</u> and includes both executive and non-executive, and the number of management and supervisory board members, including employee representatives. |
| **OUTDIR** | The percentage of <u>outside directors</u> in the board over total board of director (non-executive directors in one-tier board system and supervisory board and employees' representative's members in two-tire board system). |
| **TECOMP** | <u>Total compensation</u> is the natural log of the sum of the annual salary, annual fixed fees, meeting fees and committee fees, and any other additional performance-based bonus payments or cash benefits, in addition to short- and long-term performance- related compensation and the stock options held and exercised by executive directors. |
| | **Exogenous Variables** |
| **DIV** | Dummy variable has the value of 1 if the bank<u> paid dividends in the previous year</u>, and 0 otherwise. |
| **DEBTH** | The <u>debt-holders monitoring</u> is the percentage of long-term debt over the total debt (subordinated debt). |
| **BLOCK** | Dummy variable that is equal to 1 if the bank board of directors has a formal representative for large shareholders (more than 3% of total shares outstanding, i.e. family ownership, non-group listed companies, mutual funds, and pension funds), 0 otherwise. |
| **MTBV** | <u>Market to book ratio</u> is the market value of equity to book value of equity. It represents a bank's growth opportunities. |
| **NOUTDIR** | The natural log of <u>number of outside directors</u> in the board (non-executive directors and supervisory board members including employees' representatives). |
| **INTAS** | The percentage of <u>intangible assets</u> scaled by total assets ratio. |
| **NINSDIR** | The natural log of <u>number of executive directors</u> and management. |
| **CEODUAL** | Dummy variable has the value of 1, if the <u>CEO is also the chairman</u> of the board of directors, and 0 otherwise. |
| **BTYPE** | Dummy variable that reflects <u>different corporate governance models</u>; has the value of 1 if the bank |

|          |                                                                                     |
|----------|-------------------------------------------------------------------------------------|
|          | has a two-tier (one-tier) board system, (i.e. the Franco-German vs. Anglo-American corporate governance system, respectively). |
| **BNKSIZE** | Book value of <u>total assets</u> (in natural logs). |
| **TCAPR** | <u>Regulatory capital</u>: ratio of total capital to risk-weighted assets. |
| **CRISIS** | Dummy variable has the value of 1, for the years following the 2007-09 financial crisis (2008, 2009, 2010), and 0 otherwise. |

**Table 3**

**Summary statistics (averages 2000-2010)**

| | | Mean | Median | Std Dev. | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Panel A: Performance, governance and pay | | | | | | |
| Earnings per Share | EPS | 1.034 | 0.530 | 1.504 | 0.000 | 9.200 |
| Return on Assets | ROA | 0.007 | 0.006 | 0.017 | -0.072 | 0.183 |
| Annual share returns | SRET | 0.022 | 0.018 | 0.013 | 0.004 | 0.106 |
| Large shareholders % | LSHRH | 0.404 | 0.390 | 0.284 | 0.000 | 1.000 |
| Leverage ratio | LEVE | 0.369 | 0.367 | 0.147 | 0.005 | 0.890 |
| Direct ownership | MOWNR | 0.019 | 0.001 | 0.063 | 0.000 | 0.350 |
| No. of board members | BODSIZE | 20.269 | 19.000 | 7.016 | 5.000 | 43.000 |
| Outside directors (%) | OUTDIR | 0.710 | 0.710 | 0.098 | 0.440 | 0.930 |
| Total compensation | TECOMP | 7166216 | 4280000 | 8027089 | 345000 | 47776000 |
| | | | | | | |
| Panel B: Control (exogenous) variables | | | | | | |
| | | | | | | |
| Bank total assets (*TA*) | BNKSIZE *(TA:€000)* | 300,447 | 94,000 | 454,528 | 275 | 2,600,000 |
| Regulatory Total capital | TCAPR | 0.119 | 0.116 | 0.018 | 0.081 | 0.194 |
| Dummy crisis | CRISIS | 0.321 | 0.000 | 0.467 | 0.000 | 1.000 |
| Dummy duality of CEO | CEODUAL | 0.293 | 0.000 | 0.456 | 0.000 | 1.000 |
| Dummy one tier board | BTYPE | 0.267 | 0.000 | 0.443 | 0.000 | 1.000 |
| Dummy t-1 dividends | DIV | 0.843 | 1.000 | 0.365 | 0.000 | 1.000 |
| Subordinated debt | DEBTH | 0.418 | 0.400 | 0.221 | 0.000 | 0.980 |
| Market-to-book ratio | MTBV | 1.579 | 1.430 | 0.856 | 0.030 | 5.210 |
| Intangible assets | INTAS | 0.012 | 0.006 | 0.021 | 0.000 | 0.274 |
| No. of outside directors | NOUTDIR | 14.53 | 14 | 5.69 | 3 | 33 |
| Dummy for blockholder | BLOCK | 0.139 | 0 | 0.346 | 0 | 1 |

*Notes*: See Table 2 for variable definitions.

# Table 4

## Earnings per share (EPS), executive compensation and corporate governance

| | Dependent Variables | | | | | | |
|---|---|---|---|---|---|---|---|
| Inept. Var. | EPS | LSHRH | LEVE | MOWNR | BODSIZE | OUTDIR | TECOMP |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| EPS | | 0.0164* | -0.0161*** | -0.000105 | -0.0212* | 0.00438 | -0.0336 |
| | | (0.00793) | (0.00448) | (0.00172) | (0.00888) | (0.00270) | (0.0206) |
| LSHRH | 0.488* | | 0.0456 | 0.0120 | 0.118* | 0.0708*** | 0.211 |
| | (0.236) | | (0.0261) | (0.00938) | (0.0491) | (0.0146) | (0.116) |
| LEVE | -1.444*** | 0.113 | | 0.00197 | 0.348*** | 0.0572* | -0.0631 |
| | (0.430) | (0.0787) | | (0.0171) | (0.0855) | (0.0266) | (0.201) |
| MOWNR | 0.594 | 0.257 | -0.0590 | | 0.610* | 0.0775 | 1.852*** |
| | (1.510) | (0.200) | (0.118) | | (0.309) | (0.0957) | (0.526) |
| BODSIZE | -0.484* | 0.0813* | -0.417 | -0.00717 | | 0.0792*** | 0.458*** |
| | (0.212) | (0.0384) | (0.367) | (0.00833) | | (0.0129) | (0.0990) |
| OUTDIR | 0.949 | 0.619*** | -0.557 | 0.0580* | 0.818*** | | -1.994*** |
| | (0.684) | (0.123) | (0.526) | (0.0270) | (0.136) | | (0.317) |
| TECOMP | -0.0828 | 0.0185 | 0.00116 | 0.0133*** | 0.105*** | -0.0367*** | |
| | (0.0976) | (0.0172) | (0.00970) | (0.00368) | (0.0193) | (0.00574) | |
| BNKSIZE | 0.260*** | -0.0228** | -0.00419 | -0.0117*** | 0.0391*** | 0.00701* | 0.308*** |
| | (0.0480) | (0.00872) | (0.00495) | (0.00183) | (0.00969) | (0.00297) | (0.0177) |
| DIV | 0.847*** | -0.0458 | | -0.0151* | 0.115** | | 0.461*** |
| | (0.182) | (0.0340) | | (0.00734) | (0.0379) | | (0.0862) |
| T1CAP | -3.867 | -0.981 | -0.716 | -0.289* | -1.592* | 0.695** | 9.712*** |
| | (3.582) | (0.653) | (0.385) | (0.141) | (0.743) | (0.223) | (1.704) |
| CEODUAL | -0.596*** | -0.0434 | 0.00561 | 0.0124* | -0.0705* | 0.0318*** | 0.00500 |
| | (0.146) | (0.0270) | (0.0160) | (0.00582) | (0.0305) | (0.00926) | (0.0714) |
| BTYPE | 0.315 | 0.158*** | -0.0188 | -0.0122 | 0.120*** | -0.0169 | 0.0714 |
| | (0.164) | (0.0293) | (0.0165) | (0.00649) | (0.0334) | (0.00962) | (0.0793) |
| DEBTH | -0.403 | 0.142** | | -0.0423*** | | | |
| | (0.304) | (0.0552) | | (0.0119) | | | |
| BLOCK | -0.169 | | | | -0.217*** | 0.0234 | |
| | (0.267) | | | | (0.0539) | (0.0169) | |
| MTBV | | | -0.00264 | | | | -0.0719* |
| | | | (0.00767) | | | | (0.0340) |
| CRISIS | -0.258 | 0.0866*** | -0.0226 | 0.00812 | -0.0160 | -0.00314 | -0.0482 |
| | (0.139) | (0.0252) | (0.0143) | (0.00550) | (0.0282) | (0.00838) | (0.0653) |
| NOUTDIR | | | | 0.495 | | | |
| | | | | (0.361) | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| INTAS | | | -0.129 | | -0.321 | | |
| | | | (0.300) | | (0.577) | | |
| CONSTANT | -1.177 | -0.161 | 0.872 | 0.0654 | 0.00633 | 0.767*** | 8.283*** |
| | (1.157) | (0.210) | (0.522) | (0.0454) | (0.240) | (0.0655) | (0.428) |
| | | | | | | | |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | | | | |
| Wald test | 117.14 | 99.37 | 64.26 | 622.83 | 226.87 | 11.4 | 716.21 |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0249) | (0.0000) |
| R-sq | 0.217 | 0.228 | 0.110 | 0.155 | 0.406 | 0.203 | 0.575 |
| N | 530 | 530 | 501 | 530 | 523 | 530 | 501 |

Notes: Standard errors in brackets. Following Peterson (2009), the coefficients are estimated by using the robust Clustered Standard Errors technique. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively. See Table 2 for variable definitions. Wald tests are performed for the simultaneous significance of all coefficients (except the constant).

**Table 5**

**Return on Assets (ROA), executive compensation and corporate governance**

| Ind. Variables. | Dependant Variable | | | | | | |
|---|---|---|---|---|---|---|---|
| | ROA | LSHRH | LEVE | MOWNR | BODSIZE | OUTDIR | TECOMP |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| ROA | | -0.237 | 0.487 | 0.125 | 0.810 | -0.332 | -1.010 |
| | | (0.641) | (0.452) | (0.140) | (0.742) | (0.227) | (1.671) |
| LSHRH | -0.00109 | | 0.0242 | 0.0127 | 0.122* | 0.0812*** | 0.188 |
| | (0.00293) | | (0.0307) | (0.00945) | (0.0489) | (0.0150) | (0.115) |
| LEVE | 0.00259 | 0.0196 | | -0.00682 | 0.250*** | -0.00572 | 0.0173 |
| | (0.00450) | (0.0662) | | (0.0145) | (0.0728) | (0.0229) | (0.169) |
| MOWNR | 0.00919 | 0.266 | -0.106 | | 0.541 | 0.0466 | 1.847*** |
| | (0.0185) | (0.198) | (0.139) | | (0.310) | (0.0971) | (0.523) |
| BODSIZE | 0.00167 | 0.0818* | -0.0863 | -0.00563 | | 0.0916*** | 0.473*** |
| | (0.00259) | (0.0376) | (0.426) | (0.00825) | | (0.0128) | (0.0970) |
| OUTDIR | -0.00994 | 0.662*** | -0.231 | 0.0607* | 0.897*** | | -2.032*** |
| | (0.00824) | (0.118) | (0.611) | (0.0265) | (0.133) | | (0.308) |
| TECOMP | -0.00154 | 0.0169 | -0.00559 | 0.0131*** | 0.108*** | -0.0377*** | |
| | (0.00119) | (0.0170) | (0.0114) | (0.00367) | (0.0193) | (0.00583) | |
| BNKSIZE | 0.000497 | -0.0183* | -0.00631 | -0.0120*** | 0.0338*** | 0.00739* | 0.300*** |
| | (0.000590) | (0.00840) | (0.00564) | (0.00177) | (0.00945) | (0.00296) | (0.0168) |
| DIV | -0.00235 | -0.0169 | | -0.0128 | 0.133*** | | 0.426*** |
| | (0.00215) | (0.0318) | | (0.00693) | (0.0358) | | (0.0810) |
| T1CAP | 0.0548 | -1.436* | -0.0842 | -0.307* | -1.758* | 0.583* | 9.886*** |
| | (0.0441) | (0.647) | (0.449) | (0.141) | (0.741) | (0.227) | (1.681) |
| CEODUAL | 0.00101 | -0.0536* | -0.00277 | 0.0120* | -0.0532 | 0.0340*** | 0.0260 |
| | (0.00179) | (0.0262) | (0.0185) | (0.00572) | (0.0302) | (0.00928) | (0.0694) |
| BTYPE | -0.00190 | 0.168*** | -0.0383* | -0.0120 | 0.134*** | -0.0170 | 0.0596 |
| | (0.00199) | (0.0286) | (0.0194) | (0.00642) | (0.0331) | (0.00983) | (0.0779) |
| DEBTH | 0.00887* | 0.129* | | -0.0415*** | | | |
| | (0.00371) | (0.0548) | | (0.0119) | | | |
| BLOCK | 0.000711 | | | | -0.199*** | 0.0311 | |
| | (0.00324) | | | | (0.0539) | (0.0170) | |
| CRISIS | -0.000721 | 0.103*** | -0.0295 | 0.00881 | -0.00263 | -0.00609 | -0.0425 |
| | (0.00172) | (0.0250) | (0.0166) | (0.00554) | (0.0281) | (0.00854) | (0.0643) |
| MTBV | | | 0.00713 | | | | -0.0655 |
| | | | (0.00900) | | | | (0.0336) |
| NOUTDIR | | | 0.151 | | | | |
| | | | (0.419) | | | | |
| INTAS | | | 0.129 | | -0.494 | | |
| | | | (0.362) | | (0.590) | | |
| CONSTANT | 0.0151 | -0.165 | 0.615 | 0.0692 | -0.0122 | 0.776*** | 8.350*** |
| | (0.0143) | (0.209) | (0.607) | (0.0456) | (0.241) | (0.0672) | (0.423) |
| | | | | | | | |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | | | | |
| Wald test | 16.34 | 154.60 | 18.83 | 90.50 | 248.98 | 143.68 | 624.95 |
| | (0.0000) | (0.0000) | 0.0055 | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| R-sq | 0.027 | 0.240 | 0.036 | 0.158 | 0.404 | 0.213 | 0.573 |
| N | 532 | 532 | 510 | 532 | 532 | 532 | 510 |

Notes: Standard errors in brackets. Following Peterson (2009), the coefficients are estimated by using the robust Clustered Standard Errors technique. ***, **, * denote significance at the 1%, 5% and 10%, respectively. Wald tests are performed for the simultaneous significance of all coefficients (except the constant). See Table 2 for variable definitions.

## Table 6

## Annual share return (SRET), executive compensation and corporate governance

| | SRET | LSHRH | LEVE | MOWNR | BODSIZE | OUTDIR | TECOMP |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| SRET | | -0.00946 | -0.0518** | -0.000215 | 0.000317 | 0.00984 | -0.140 |
| | | (0.0295) | (0.0199) | (0.00638) | (0.0337) | (0.0104) | (0.0768) |
| LSHRH | -0.0207 | | 0.0312 | 0.0142 | 0.125* | 0.0710*** | 0.172 |
| | (0.0634) | | (0.0301) | (0.00929) | (0.0495) | (0.0147) | (0.115) |
| LEVE | -0.256* | 0.0450 | | -0.00736 | 0.249*** | 0.0105 | 0.0266 |
| | (0.101) | (0.0683) | | (0.0148) | (0.0749) | (0.0234) | (0.173) |
| MOWNR | -0.0311 | 0.291 | -0.169 | | 0.566 | 0.0494 | 1.945*** |
| | (0.406) | (0.200) | (0.137) | | (0.312) | (0.0967) | (0.522) |
| BODSIZE | 0.00260 | 0.0826* | 0.0751 | -0.00719 | | 0.0862*** | 0.491*** |
| | (0.0570) | (0.0379) | (0.419) | (0.00824) | | (0.0130) | (0.0968) |
| OUTDIR | 0.172 | 0.615*** | 0.0529 | 0.0658* | 0.900*** | | -2.003*** |
| | (0.183) | (0.120) | (0.603) | (0.0266) | (0.135) | | (0.310) |
| TECOMP | -0.0472 | 0.0153 | 0.00206 | 0.0143*** | 0.115*** | -0.0402*** | |
| | (0.0266) | (0.0173) | (0.0116) | (0.00370) | (0.0197) | (0.00601) | |
| BNKSIZE | -0.00117 | -0.0160 | -0.0104 | -0.0127*** | 0.0276** | 0.00972** | 0.307*** |
| | (0.0133) | (0.00867) | (0.00566) | (0.00180) | (0.00981) | (0.00300) | (0.0170) |
| DIV | 0.0710 | -0.0193 | -0.0429* | -0.0118 | 0.139*** | 0.0184 | 0.393*** |
| | (0.0481) | (0.0325) | (0.0218) | (0.00705) | (0.0365) | (0.0114) | (0.0824) |
| T1CAP | 4.081*** | -1.660* | 0.106 | -0.242 | -1.599* | 0.454 | 9.988*** |
| | (0.979) | (0.673) | (0.466) | (0.145) | (0.775) | (0.237) | (1.743) |
| CEODUAL | -0.0264 | -0.0621* | 0.00893 | 0.0144* | -0.0448 | 0.0277** | 0.0106 |
| | (0.0395) | (0.0266) | (0.0183) | (0.00572) | (0.0306) | (0.00931) | (0.0696) |
| BTYPE | 0.109* | 0.165*** | -0.0461* | -0.0119 | 0.125*** | -0.00999 | 0.0906 |
| | (0.0437) | (0.0290) | (0.0203) | (0.00643) | (0.0336) | (0.0105) | (0.0781) |
| CRISIS | -0.258*** | 0.106*** | -0.0531** | 0.00850 | -0.00207 | 0.00424 | -0.0876 |
| | (0.0378) | (0.0267) | (0.0175) | (0.00577) | (0.0298) | (0.00908) | (0.0680) |
| DEBTH | -0.00523 | 0.121* | | -0.0451*** | | | |
| | (0.0837) | (0.0565) | | (0.0121) | | | |
| BLOCK | 0.00546 | | | | -0.215*** | 0.0385* | |
| | (0.0719) | | | | (0.0547) | (0.0171) | |
| INTAS | | 0.203 | 0.150 | | -0.277 | | |
| | | (0.510) | (0.345) | | (0.582) | | |
| MTBV | | | 0.0101 | | | | -0.0746* |
| | | | (0.00877) | | | | (0.0334) |
| NOUTDIR | | | -0.00184 | | | | |
| | | | (0.412) | | | | |
| CONSTANT | 0.278 | -0.134 | 0.309 | 0.0567 | -0.0238 | 0.777*** | 8.197*** |
| | (0.312) | (0.211) | (0.599) | (0.0452) | (0.243) | (0.0664) | (0.426) |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Wald test | 88.45 | 150.35 | 29.53 | 93.95 | 240.06 | 134.73 | 633.20 |
| | (0.0000) | (0.0000) | 0.0055 | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| R-sq | 0.147 | 0.238 | 0.063 | 0.166 | 0.397 | 0.207 | 0.583 |
| N | 529 | 522 | 500 | 529 | 522 | 529 | 500 |

Notes: Standard errors in brackets. Following Peterson (2009), the coefficients are estimated by using the robust Clustered Standard Errors technique. ***, **, * denote significance at the 1%, 5% and 10%, respectively. Wald tests are performed for the simultaneous significance of all coefficients (except the constant). See Table 2 for variable definitions