

The Effect of Board Size and Composition on European Bank Performance

Christos K. Staikouras*¹, Panagiotis K. Staikouras** and Maria-Eleni K. Agoraki***

** Lecturer in Finance, Department of Accounting and Finance, Athens University of*

Economics and Business

*** Lecturer in Law, Department of Banking and Financial Management, University of Piraeus*

**** PhD Candidate, Department of Accounting and Finance, Athens University of Economics*

and Business

Abstract

Banks are “special” financial institutions generating distinct corporate governance challenges. The present paper examines the relationship between two of the most pertinent corporate governance factors –that is, the size of the Board of Directors and the proportion of non-executive directors– and firm performance on a sample of 58 large European banks over the period 2002-2004. The empirical analysis embraces a number of bank-specific variables. Our results reveal that bank profitability is negatively related to the size of the Board of Directors, while the impact of Board composition, although positive in all models, is, in most cases, insignificant. The results are robust after controlling for firm-specific variables.

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¹ *Corresponding address: Department of Accounting and Finance, Athens University of Economics and Business, 76 Patision Street, 104 34, Athens, Greece, Tel.: (+30) 210 82 03 459, Fax: (+30) 210 82 28 816, e-mail: cstaik@aueb.gr (C. Staikouras).*

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1. Introduction

Over recent years, corporate governance has become a major and highly contentious issue in all advanced economies, as well as in developing countries. Spurred by a wave of corporate scandals mainly owed to self-dealing, fraud and poor quality management decision-making, corporate governance has attracted international attention as a means to address the “separation of ownership and control” (or “agency”) problem in public companies, thus promoting corporate efficiency.

Indeed, one of the most puzzling challenges posed by modern corporations with difused ownship has been the separation between management and ownership. Managers, who are delegated with the task of running the firm on behalf of unltimate owners, can be viewed as agents or representatives of shareholders-principals, who bear the residual risks and receive the residual awards. The separation of ownership and management also entails divergence of interests: managers-agents have interests (eg. high levels of remuneration and social status), which differ and often conflict with those of shareholders-principals (eg. maximization of their investment in the form of increased dividends and capital value). To make things worse, shareholders lack the necessary information to efficiently monitor managers’ decision-making, which facilitates abusive or self-centered management behaviour (Williamson (1963), Jensen and Meckling (1976), Fama and Jensen (1983a)).

According to the most recent description offered by the Organisation for Economic Cooperation and Development (OECD), corporate governance “involves a set of relationships between a company’s management, its Board, its shareholders and other stakeholders [and] also provides the structure through which the objectives of

the company are set, and the means of attaining those objectives and monitoring performance are determined.”¹

Consistently with the OECD definition, the Basel Committee on Banking Supervision set out a definition from the perspective of banking industry, according to which “corporate governance involves the manner in which the business and affairs of individual institutions are governed by their Boards of Directors and senior management, which affects how banks: set corporate objectives (including generating returns to owners); run day-to-day operations of the business; meet the obligation of accountability to their shareholders and take into account the interests of other recognized stakeholders.”²

Put it differently, corporate governance refers to the “ways in which suppliers of finance to corporations assure themselves of getting a return on their investment”;³ alternatively, in the words of Michael Jensen, corporate governance or the “internal control system” constitutes one of the control mechanisms to resolve the divergence between managers’ decisions and those that are optimal from the society’s point of view.⁴ As a result, by eliminating or mitigating the agency problem, a sound system of corporate governance also contributes to improved corporate efficiency.⁵

In recent years, several important initiatives have been taken in the European Union (EU), the United States (US) and at the international level aiming at the establishment of sound corporate governance practices. Since the launching of the 1999 Financial Services Action Plan (FSAP),⁶ which set for the first time corporate governance in the agenda of policies targeting at the creation of a single market for financial services, several steps of progress have been made: the 2002 Report on a Modern Regulatory Framework for Company Law in Europe,⁷ the Commission Recommendation on directors’ remuneration⁸ and the structure of the Board of

Directors,⁹ the Commission Proposal for a Directive on directors' liability,¹⁰ as well as the Consultation initiated by the Commission and being currently under way concerning the promotion of shareholders' rights,¹¹ to name only a few, connote the importance attached by the EU to the establishment of a sound corporate governance framework on a Community-wide basis. On the other side of the Atlantic, the notorious Sarbanes-Oxley Act of 2002 constitutes the culmination of extensive and much heated discussion among academics and policy-makers on acceptable corporate governance standards and the regulatory response to high-profile corporate mis-governance scandals.

Corporate governance has also been at the forefront of the policy agendas of international fora. The OECD promulgated the 1999 Principles of Corporate Governance, which were recently revised, in 2004. The European Association of Securities Dealers (EASD) issued the 2000 Corporate Governance Principles and Recommendations, while the International Corporate Governance Network (ICGN) issued the 2005 Statement on Global Corporate Governance Principles, revising its 1999 version of Principles.¹² In relation to the banking industry, in particular, the Basel Committee on Banking Supervision has promulgated a set of accepted corporate governance principles under its 1999 Paper on "Enhancing Corporate Governance for Banking Organisations",¹³ currently under revision following the 2005 Consultative Document,¹⁴ while one should not fail to mention the 1998 Basel Paper under the title "Framework For Internal Control Systems In Banking Organisations" laying out thirteen core principles that should guide the organisation and operation of banks' internal control systems.¹⁵

Previous empirical studies on corporate governance concerning the EU banking sector are limited, with the emphasis being placed upon research conducted

in the US banking sector. The present paper assesses the relationship between the Board size and composition with measures of firm performance (ie. market- or accounting-based profitability) and bank-specific variables in the European banking industry over the period 2002-2004. The sample consists of 58 out of the 100 largest credit institutions operating in Europe, which comprises a large portion of banks in importance based on balance sheet aggregates.

The structure of the paper is as follows. Section 2 exemplifies why the adoption of sound corporate governance systems is particularly important for banks vis-a-vis other non-bank (financial) institutions. Section 3 reviews the empirical literature on the corporate governance factors captured in the present paper. Section 4 analyses the data collection process and provides the empirical methodology. Section 5 contains the estimated results and discusses the empirical evidence. Some conclusions are offered in the final section.

2. Corporate governance in banks: what is so special about it?

Financial institutions undertake a number of services that are indispensable for the functioning of modern economy and economic growth. In general terms, financial intermediaries provide access to payment systems, generate liquidity and facilitate transactions inter alia by reducing transaction/participation costs and information asymmetries and performing a risk-management role through the offering of financial products which enable consumers to address economic uncertainties by packaging, hedging, pricing and sharing risks.¹⁶ Considering the importance of financial intermediation, it comes as no surprise that ensuring safety and soundness of financial institutions has been a pivotal public policy concern of regulators worldwide. The conventional view on regulatory involvement in financial markets asserts that

regulatory intervention can principally be justified on two bases, that is, enhancement of financial stability and protection of consumers (ie. depositors, investors and holders of insurance policies).

Promotion of financial stability is sought through financial regulation safeguarding against systemic risk, ie. the risk that failure of a particular financial intermediary may adversely affect the well-being of other financial intermediaries, thus triggering a chain reaction which could undermine the stability of the financial system as a whole. Such a contagious effect may be the result of either real exposures of sound intermediaries to the failed institution or mass withdrawal/liquidation of consumers' assets/claims from/to sound institutions on the assumption of suspected exposures to the failed intermediary. Prudential regulation in the form of capital adequacy and liquidity requirements, constraints on large exposures, standards on the suitability and quality of management team and requirements concerning the efficiency of internal control systems of financial institutions constitutes the typical, ex ante response to systemic risk. On an ex-post basis, following the failure of a financial institution, the adoption of insurance policies (eg. deposit insurance, investor compensation schemes) as well as government-led involvement in the form of capital injections (eg. lender-of-last-resort) or special re-organization or bankruptcy/liquidation procedures also provide an additional safety net against the spread of crisis to the financial system.¹⁷

Protection of consumers' interests as rationalization for financial regulation is founded on the need to address one of the types of market externality-failure, that is, "information asymmetry"; consumers of financial services/products lack the essential information and analytical skills to efficiently assess both the quality of financial intermediaries as well as the characteristics of the contractual relationship they enter

into with such intermediaries. Information asymmetries of the form described above render consumers of financial services/products particularly vulnerable to abusive behavior on the part of financial intermediaries. Prudential and antitrust regulation coupled with the introduction of conduct of business and disclosure requirements constitute the standard regulatory tools to address information asymmetry concerns and promote consumers' interests.¹⁸

Now that a generic overview of the types and rationales of conventional financial regulation has been set out, it is time to examine whether and to what extent the justifications for regulatory intervention and the forms of such intervention apply uniformly upon all types of financial institutions. The prevailing view is that banks pose different and somehow unique regulatory problems, both in terms of substance and degree, in comparison to non-bank financial institutions (securities firms and insurance companies), or, to borrow the words of Gerald Corrigan, former President of the Federal Reserve Bank of Minneapolis, "banks are special" (Corrigan (1982)). In short, banks are special for two fundamental reasons: first, traditional banking services, ie. receiving deposits and extending loans, introduce unique systemic issues; and second, banks possess a critical position in the clearing and payment system. The aforementioned distinctive characteristics induce the application of somehow "special" regulatory responses, which however, in turn, introduce novel challenges, especially –as will be further explained– in the area of corporate governance.

In comparison to non-bank financial institutions, banks are highly leveraged firms taking a wide range of complex risks in their daily operations, including, among others, credit, liquidity, interest rate, operational and market risk. Moreover, by contrast to securities firms and insurance companies whose assets comprise liquid investments, banks' balance sheet is comprised of illiquid, long-term assets, which are

funded through liquid, short-term liabilities (maturity and duration gap). The nature of traditional banking services, ie. transformation of marketable short-term deposits into non-marketable long-term loans, and the ensuing maturity mismatch between assets and liabilities renders banks particularly vulnerable to “bank-runs” or “panics” generating liquidity problems. Taking into account that banks typically retain only a portion of deposits as reserve, significant liquidity problems may arise in the event of large unanticipated withdrawals by depositors.¹⁹ To make things worse, liquidity problems may turn into solvency problems, as banks facing liquidity shocks will be forced to honour their obligations by selling their non-marketable assets at a loss. The opacity of banks’ loan portfolio generating intensified information asymmetry problems (Furfine (2001), Levine (2004)) and/or psychological factors may trigger the spread of isolated liquidity problems into the banking system. Indeed, depositors of banks, others than the ailing bank, may perceive such problems as signal of a more general banking crisis; the strong interconnectedness of banks also contributes to the augmentation of the “contagion” or “domino” effect.²⁰

Banks are special, however, not only in relation to their capital structure, but also with respect to their pivotal position in the financial system. Banks constitute the main –and in some cases the only– source of finance (except of market-based financial markets). Understandably, therefore, bank liquidity or solvency problems have a direct and severe adverse impact upon the smooth operation of the financial system as a whole.²¹ In its 1999 Paper on corporate governance for banking organizations, the Basel Committee underlined that banks “are a critical component of any economy”, concluding that they finance commercial enterprises, provide basic financial services/products to consumers, access to payment systems and, some of them, credit and liquidity facilities in difficult market conditions.²²

The typical regulatory reaction to the special characteristics of banks and the concomitant systemic risks posed to the financial system have been the prologue of “safety nets”, in the form of deposit insurance policies and lender-of-last-resort operations, which are activated once prudential regulation has failed to prevent failure.²³ Safety net policies are set up to guarantee depositors that the funds they entrusted to banks are not in jeopardy, thus preventing costly bank runs and their destabilizing contagious impact. Deposit insurance secures that depositors will not suffer loss in the event of bank failure, while lender-of-last resort operations entail the provision of credit facilities to illiquid yet solvent banks, thus enabling the latter to meet their obligations towards their clients without resorting to detrimental “fire sales” of their assets. Despite their benevolent intent, safety net policies are not themselves free of defects. The existence of an implicit or explicit public safety net against banks’ failure generates perverse incentives (“moral hazard”): depositors and creditors rely heavily or exclusively to the official guarantee, thus limiting their incentives to efficiently monitor the management of banking institutions; and banks, taking as granted the employment of safety net policies in case of trouble, are induced to take on more risks.²⁴

Perverse incentives (“moral hazard”) as a result of safety nets generate conflicting interests among the various groups of stakeholders, thus augmenting agency problems and raising novel corporate governance concerns for banks. In particular, fixed claimants (depositors and creditors) lack sufficient incentives to efficiently monitor prudent running of credit institutions, banks’ managers are incited to become increasingly risk-lovers, ultimate owners (shareholders) are also prone to excessive risk taking, while regulatory authorities representing public interest are concerned with the safety and soundness of the banking system.²⁵ In this context, the

Board of Directors in banks assumes a particularly pivotal and sensitive role in achieving a delicate balance among the (conflicting) interests of the various groups of stakeholders.²⁶ Put it more simply, banks are special financial institutions calling for distinctive regulatory treatment; yet, special regulatory treatment generates novel corporate governance challenges, attracting special attention (Levine (2004)).

From a corporate governance perspective, therefore, banks are unique too.²⁷ Recently, the European Central Bank acknowledged the importance of sound corporate governance systems, making the valuable notice that corporate governance is even more important for banks considering their role as financial intermediaries and the comparatively higher risk of contagion in the banking sector.²⁸ This is also explicitly recognized by the Basel Committee, noticing that “[c]orporate governance for banking organizations is arguable of greater importance than for other companies, given the crucial financial intermediation role of banks in an economy, the need to safeguard depositors’ funds and their high degree of sensitivity to potential difficulties arising from ineffective corporate governance. Effective corporate governance practices, on both a system-wide and individual bank basis, are essential to achieving and maintaining public trust and confidence in the banking system, which are critical to the proper functioning of the banking sector and economy as a whole.”²⁹

Ensuring sound corporate governance of banks is also of paramount importance because banks play themselves a crucial role in the corporate governance of other firms, either as creditors or equity holders. Consequently, well-managed banks are likely to secure high quality management decision-making of the firms they are related to, either as shareholders or loan providers, thus promoting efficient allocation of resources in the economy and vice versa.³⁰

A robust system of corporate governance, therefore, complements and facilitates the work of bank supervisors, which also explains the supervisory interest in the setting up and enforcement of reliable corporate governance mechanisms.³¹ The structure and responsibilities of the Board of Directors are placed at the core of a corporate governance framework for banks; considering that the Board of Directors constitutes the competent corporate body for adopting, implementing and monitoring strategic objectives and policies, as well as efficiently amalgamating the divergent interests of the various groups of stakeholders, the “effective oversight of the business and affairs of a bank by its Board and senior management contributes to the maintenance of an efficient and cost-effective supervisory system.”³²

It is more than characteristic that five out of the seven “sound corporate governance practices” set out by the 1999 Basel Committee Paper on corporate governance for banking organizations directly concern the composition and duties of the Board of Directors.³³ In general terms, the Basel Committee suggests that Boards should adopt strategic objectives and corporate values (eg. set up policies that prohibit conflicts of interest, self-dealing and fraud, as well as preferential treatment of related parties and favoured entities);³⁴ establish and enforce clear lines of responsibility and accountability;³⁵ comprise high-quality members not subject to undue influence from management or outside concerns;³⁶ ensure that it is not oversized and maintains appropriate channels of communication with senior management and auditors;³⁷ guarantee that executive management efficiently supervises line managers in specific business areas and activities;³⁸ secure that compensation policy of executive management and senior officers is consistent with bank’s ethical values, objectives, strategy and control environment.³⁹

The 2005 Basel Committee Consultative Document on corporate governance for banks reinforces and further explicates the aforementioned practices. Due weight is placed upon the need to ensure that the Board of Directors is well-qualified and is able to exercise sound independent judgment about the affairs of the bank. Moreover, a new principle that should guide Board's behaviour is added: Board directors should make sure that they understand the bank's operational structure, including operating in jurisdictions or through structures, which impede transparency ("know-your-structure" principle).⁴⁰ Once more, it is underscored with particular emphasis that the duties of care and loyalty should be fully respected by Board directors, that the size of the Board should allow for efficiency and real strategic discussion and that the Board should comprise an adequate number of non-executive, independent directors.⁴¹

While the composition and duties of the Board of Directors has been at the core of corporate governance debate concerning banks and non-bank (financial) institutions, both the Basel Committee and the European Community have clearly abstained from dictating a particular governance structure, thus leaving firms the discretion to choose either the "unitary" or "two-tier" Board system. According to the Council Regulation 2157/2001 on the Statute for a European company (SE), companies are free to provide for a supervisory and management organ ("two-tier" system) or an administrative organ ("one-tier" system).⁴² In the former case, the management organ is responsible for running the company, while the supervisory organ undertakes the role of supervising the management organ; in the latter case, corporate management is assumed by the Board as a collegiate body, yet day-to-day management may be delegated to particular executive directors (managing directors) with the remaining non-executive directors (supervisory directors) monitoring the work of executive directors.⁴³ In line with the position endorsed by the European

Community, the Basel Committee has stressed that the proposed corporate governance principles apply in full to all banks, regardless of the Board structure chosen, ie. two-tier Boards comprising a senior management Board and supervisory Board as opposed to unitary Boards.⁴⁴ The same approach of indifference as to the adoption of the “one” or “two-tier” Board structure is followed by the OECD, stressing that the proposed Principles apply to whatever Board structure is assigned with the tasks of governing the company and monitoring management.⁴⁵

3. Literature Review

As already discussed, Board size and composition constitute two of the most prevalent corporate governance factors, attracting wide theoretical attention. Indeed, researchers have emphasized the influence the size and the composition of the Board of Directors may have in corporate affairs. These corporate governance factors may affect the Board of Directors’ ability to be an effective monitor of senior management and influence the impact of insiders on corporate performance by acting as either a complement of or substitute for ownership structure (Singh and Davidson (2003)).

It is widely believed that companies with small Board of Directors are more effective and profitable since they have a better monitoring role (Jensen and Meckling (1976), Olson (1982) Gladstein (1984) Lipton and Lorsch (1992)). Indeed, Jensen (1993) concludes that the effectiveness of a Board may decline as Board size increases above a moderate number. Yermack (1996) examines the relationship between firm performance and Board size on a sample of large U.S. corporations and finds a significant negative relationship. The result is robust to numerous controls for firm size, industry membership, inside stock ownership, growth opportunities and alternative corporate governance structures. Eisenberg, Sundgren and Wells (1998)

conclude similarly for a sample of small and midsize Finnish firms. On the other hand, Holthausen and Larcker (1993) consider Board size among a range of variables that might influence executive compensation and company performance. In this case, they do not observe any association between Board size and company performance. Johnson, Daily and Ellstrand (1996) detect similar results.

Moreover, many studies have examined the effect Board composition may have on firm performance, obtaining mixed conclusions. Fama (1980) and Fama and Jensen (1983a) argue that non-executive directors add value to firms by providing expert knowledge and monitoring services. Outside directors are supposed to be guardians of the shareholders' interests through monitoring, or, in some cases, substitutes for other types of monitoring mechanisms. Empirical results support the argument that outside directors are more effective monitors and a critical disciplining device for managers (Coughlan and Schmidt (1985), Dunn (1987), Hermalin and Weisbach (1988), Singh and Davidson (2003)). Fama and Jensen (1983b) argue that outside directors have an incentive to act as monitors of management because they want to protect their reputation as effective and independent decision-makers. Moreover, outside directors may contribute to the value of firms through their evaluation of strategic decisions (Brickley and James (1987), Byrd and Hickman (1992), Lee et al., 1992) and through their role in the dismissal of inefficient and poorly performing management (Weisbach (1988)). Thus, there is robust evidence that Board composition may significantly influence corporate performance by reducing agency costs (Singh and Davidson (2003)).

Weisbach (1988) examines Board composition and firm performance in a chief executive officer (CEO) turnover equation. The results indicate that when boards are dominated by outside directors, the CEO turnover is more sensitive to firm

performance than it is in firms with insider-dominated boards. Zahra and Pearce (1989) find a positive relationship between the percentage of non-executive directors on the Board of Directors and firm performance. Schellenger, Wood and Tashakori (1989) observe a positive relationship between outside director representation and higher risk-adjusted corporate financial performance. Daily and Dalton (1992) indicate that there may be a systematic positive relationship between the proportion of outside directors and firm performance. Baysinger and Butler (1985) conclude that higher percentages of outside directors are associated with higher financial performance. However, they observe this relationship with a ten-year lag.

On the other hand, Vance (1968) realises that boards dominated by insiders exemplify higher financial performance. Agrawal and Knoeber (1996) estimate a simultaneous system of firm performance, Board composition and other control variables. They observe that outside representation on the Board is negatively related with firm performance. Yermack (1996) also finds a negative relationship between performance and the proportion of outside directors. Moreover, Bhagat and Black (2001) observe a negative correlation between Board independence and various measures of firm performance.

Finally, there are a number of studies that fail to demonstrate any systematic relationship between Board composition and performance. Hermalin and Weisbach (1991) do not observe any relationship between firm performance and the fraction of outside directors. Johnson, Daily and Ellstrand (1996) and Bhagat and Black (1999) conclude similarly. Adams and Mehran (2003) support the view that a lack of correlation between the Board composition and performance is consistent with the theory; directors, as a result of regulatory requirements, do not emphasize in value maximization over the safety and soundness of the institution.

4. Data Collection and Methodology

In this study we examine the effect Board structure, ie. the Board size and composition, may have on bank performance. The initial sample consists of the 100 largest European banks in terms of balance sheet aggregates, ie. total assets, for the period 2002-2004. The particular sample period is chosen to examine the potential influence the 1999 Basel Committee Paper on corporate governance for banking institutions may have on the Board structure. The three-year time period is adequate for changes to be incorporated in the Board structure of banking institutions. The requirement that banks should be included among the 100 largest credit institutions in all years over the examined time period may raise concerns about sample selection bias, as included banks in the sample may have systematically different, perhaps superior governance, than do the excluded and smaller firms. However, the requirement of large banks is imposed to study the role of corporate governance in firms where the potential impact of poor governance could be more serious (Booth, Cornett and Tehranian (2002), Adams and Mehran (2003)). Data for the Board size and composition are collected from their published annual reports, while all accounting and market variables are constructed using data collected from Fitch-IBCA Bankscope database. For the calculation of Tobin's Q Thomson ONE Banker Database was applied. The annual balance sheet and income statement figures are comparable across countries and therefore suitable for a panel study. The data are reviewed for reporting errors and other inconsistencies. It should be noted that all countries being analyzed are subject to the same survival bias, so that the comparisons across countries would still be valid. Due to difficulties on collecting data in a pan-

European basis, the final balanced sample includes 58 credit institutions (174 observations in total) (see Annex 1).

(Please insert Annex 1 about here)

The dependent variable is bank performance. All performance measures, regardless of their specific objectives, use accounting and market data to assess the financial condition of an institution at a point in time, as well as to determine how well it has been managed over a period of time. Profitability can be used as a summary index of performance. Therefore, we incorporate the two most widely used measures of bank profitability, the return on average assets (*ROA*), ie. the ratio of earnings to average assets, and the return on average equity (*ROE*), ie. the ratio of earnings to average equity. In both cases, profits are taken before tax to avoid the different taxation systems that are implemented across the European region.

Moreover, we include the Tobin's Q (*TQ*) ratio which captures the value of future investment opportunities. Tobin's Q is defined as the ratio of the market value of assets to the replacement cost of assets. Alternatively, Tobin's Q can be measured as the market value of assets (book value of assets plus market value of equity minus book value of equity) over the book value of assets. The latter, is the approximation we apply in the current study.

Independent variables are those related to the Board structure of the credit institution (ie. Board size and composition), as well as firm-specific variables determining the riskiness of the firm or reflecting changes in the balance sheet composition.

The Board size (*BS*) variable is described by the number of directors on the Board at the end of each examined financial year. In all but a few cases, this is a figure released in the first four months of the next financial year. The Board

composition (*BC*) variable is captured by the percentage of non-executive directors in the Board of Directors at the end of each examined financial year. Director classifications are those used in previous studies (Weisbach (1988), Hermalin and Weisbach (1988), Brickley, Coles and Terry (1994), Coles, McWilliams and Sen (2001), Adams and Mehran (2003), John and Qian (2003)). Directors that are currently employed by the firm, retired employees of the firm, related company officers or immediate family members of firm employees are classified as executives. Non-executive directors are members of the Board who are not top executives, retired executives, former executives, relatives of the CEO or the chairperson of the Board, or outside corporate lawyers employed by the firm at any point during our sample period. Moreover, with respect to banks that adopt the two-tier system, the assumption made is that the directors that belong to the supervisory Board perform as non-executives (Van Greuning and Brajovic-Bratanovic (2003)).

The bank-specific variables can be defined as those factors that are influenced by the bank's management decisions and policy objectives. Studies which deal with such "endogenous" determinants employ variables that account for bank size, risk management and expense administration.

The loans to total assets ratio (*LA*) is included to portray the balance sheet composition and is used as a proxy for capturing bank liquidity. Since loans, which typically represent significant part of bank's assets, are difficult to trade in a secondary market, they are the least liquid assets, after fixed assets, in a bank's balance sheet. Hence, a high ratio of loans to total assets indicates a relative illiquid bank, whereas a low ratio indicates a bank characterised with excess stored liquidity. On the other hand, loans, especially credit to households, are riskier and have a greater expected return than other bank assets, like government securities. Thus, one

would expect a positive relationship between this variable and profitability (Bourke, 1989). It could be the case, however, that banks that are rapidly increasing their loan portfolio have to pay a higher cost for their funding requirements and this could reduce the positive impact on profitability (Molyneux and Thornton (1992)).

The quality of the credit portfolio is of vital importance for a bank's performance (Thakor (1987), Strong and Meyer (1987), Musumeci and Sinkey (1990), Grammatikos and Saunders (1990), Madura and Zarruk (1992), Kim and Santomero (1993), and others). A non-econometric study by Duca and McLaughlin (1990) provides taxonomy of the developments affecting bank profitability from 1985 to early 1990. They conclude that variations in bank profitability are largely attributable to variations in loan loss provisions. We use the loan loss provisions to loans (*LLP*) ratio to proxy for the credit risk that characterizes the loan portfolio. The theory suggests that increased exposure to credit risk is normally associated with decreased firm profitability. This result may be justified by taking into account the fact that the more financial institutions are exposed to high-risk loans, the higher the accumulation of unpaid loans, implying that these loan losses have produced decreased returns for many banks (Miller and Noulas (1997)).

Financial leverage has been demonstrated to be important in explaining the performance of financial institutions. The equity to assets (*EA*) ratio is included as a proxy of the overall capital strength and leverage and its impact on bank profitability is ambiguous. As the lower ratio suggests a relatively risky position, one would expect a negative coefficient on this variable. However, it could be the case that higher levels of equity suggest cheaper cost of capital and therefore this variable may have a positive impact on profitability (Molyneux (1993)). Moreover, a higher equity to assets ratio tends to reduce the risk of equity and therefore lowers the equilibrium

expected return on equity required by investors. On the other hand, an increase in capital may raise expected earnings by reducing the expected costs of financial distress, including bankruptcy. Studies by Bourke (1989) and Molyneux and Thornton (1992) observe a positive relationship between the equity to assets ratio and bank profitability.

Operating expenses is a very important determinant of profitability, closely related to the notion of efficient management. The overheads efficiency ratio, ie. the ratio of operating expenses to total assets (*OEA*), is the best proxy measure for the average cost of non-financial inputs to banks (Fries and Taci (2005)). The underlying doctrine in the literature argues that the lower the overheads are, as per cent of assets, the more efficient and profitable is a financial institution. The ratio of operating expenses to assets is expected to be negatively related to profitability, since improved operating expenses management will increase efficiency and, therefore, raise profits. However, Molyneux and Thornton (1992) observed a positive relationship meaning that high profits earned by firms may be appropriated in the form of higher payroll expenditures.

The size variable is introduced to capture potential economies or diseconomies of scale in the banking sector. This variable controls for cost differences and product and risk diversification according to the size of the credit institution. The first factor could lead to a positive relationship of the size with bank profitability if there are significant economies of scale, while the second to a negative one if increased diversification leads to lower risk and thus lower required returns. Among others, Smirlock (1985) and Akhavein et al. (1997) find a positive and significant relationship between size and bank profitability. Some other authors, like Wall (1985), observe that bank size does not have any significant effect on bank profitability. Generally, the

effect of a growing bank size on profitability has been proved to be positive up to a certain extent, while the effect of the size could be negative in the case of very large banks due to bureaucratic and other reasons. We use the banks' assets (in a logarithmic form) (*TA*) to capture this possible non-linear relationship, ie. the scale effect increasing at a decreasing rate as the size range of banks increases.

Table 1 presents some descriptive statistics on the Board structure, the performance measures and the bank-specific variables for the sample of European banks over the period 2002-2004.

(Please insert Table 1 about here)

The number of Board members varies from 7 to 45 people, with the mean at 17.11. Booth, Cornett and Tehranian (2002) provide evidence that bank holding companies maintain significantly larger Boards of Directors (16.37 members in 1999) than industrial firms (11.79 members). There are at least three plausible reasons why credit institutions contain larger boards (Adams and Mehran (2003)). First, studies have shown that Board size is positively related to the firm size (Yermack (1996), Hermalin and Weisbach (2003)) and banks are larger than manufacturing firms in terms of balance sheet aggregates. Second, bank boards may be larger because of their complex organizational structure. Banks may own or control many subsidiary financial institutions, each of which has its own Board. Thus, coordination among these different boards may affect the structure of the bank's Board. Finally, the nature of mergers and acquisitions in the financial sector could also play a role in maintaining the large size of the average bank Board.

The number of non-executives varies from 2 to 36 people, with a mean of 11.24. The presence of non-executives in the Board of Directors floats from 16.67 per cent to 90.00 per cent, with a mean of 64.40 per cent. Booth, Cornett and Tehranian

(2002) convey that industrial firms contain a significantly smaller percentage of outside directors in their Board of Directors. Indeed, outsiders on the boards of these firms average 71.80 per cent, significantly less than the respective observed for banks (81.29 per cent).

As it concerns the performance measures over the period 2002-2004, the average ROA stands at 0.75 per cent, the average ROE is 14.25 per cent, while the average Tobin's Q ratio is 1.03 per cent. Moreover, the average LA ratio arises at 55.93 per cent (the median is 58.07 per cent), while the average LLP ratio stands at 0.67 per cent (the median is 0.63 per cent). The average EA ratio is 5.29 per cent (the median is 5.11 per cent), while the average OEA ratio is 1.91 per cent (the median is 2.00). The mean value for the size is 146.26 billion euros.

The skewness and the kurtosis indicate that the variables are not normally distributed. Indeed, the Board size, ROA and TA as well as the LLP and OEA variables are highly leptokurtic, while the rest are highly platykurtic. Thus, the natural logarithm of all variables is taken to make the variables log-normally distributed. Thus, natural logarithmic transforms are used to avoid the misspecification problems associated with the absolute levels (Daily et al., 1998).

If we divide the sample of banks according to the system that each one of them follows,⁴⁶ we notice that banks that adopt the one-tier Board system present higher mean and variance values in most of the firm-specific and all performance variables. As concerns the two-tier Board system, we observe higher values for the corporate governance variables, ie. the Board size and composition.

Table 2 presents the Pearson correlation matrix. Apart from the profitability measures, there are very few significant correlations between the variables. Only the EA ratio shows a significant correlation with the ROA and OEA variables. Therefore,

the EA variable is dropped from the regression when ROA acts as the independent variable to avoid possible multicollinearity.

(Please insert Table 2 about here)

5. Empirical Results

This paper seeks to examine the relationship between bank profitability and various Board-related and bank-specific determinants. This is tested by implementing the ordinary least-squares analysis on a panel dataset.

Initially, we examine whether the Board structure, ie. the Board size and composition, affects the bank-specific variables and bank performance (Table 3). Moreover, we assess whether the presence of the size variable can significantly alter the sign and the significance of the obtained results. Demircuc-Kunt and Maksimovic (1998) suggest that the extent to which various financial, legal and other factors (eg. corruption) affect bank profitability is closely linked to the size of the firm. To this end, the following linear regression model is estimated:

$$BSV_{it} = c + \beta_1 BS_{it} + \beta_2 BC_{it} + \varepsilon_{it} \quad (1)$$

where BSV_{it} is the bank-specific (or performance-related) variable for the credit institution i at time t , BS_{it} stands for the Board size of the bank i , BC_{it} is the proportion of non-executives in the Board of Directors of bank i , c is the constant term, β_1 and β_2 are the coefficients of the variables, and ε_{it} is the disturbance with v_i the unobserved bank-specific effect and u_{it} the idiosyncratic error. This is a one-way error component regression model, where $v_i \sim \text{IIN}(0, \sigma_v^2)$ and independent of $u_{it} \sim \text{IIN}(0, \sigma_u^2)$. Then, we conduct the same test by including the size variable (TA_{it}) in Equation (1).

(Please insert Table 3 about here)

We observe a significant negative relationship of the Board size with all performance measures at the 1 per cent level of significance, even when the size variable is included in the analysis. On the other hand, the coefficient of the variable capturing the proportion of non-executives in the Board of Directors is positive but statistically insignificant under all measures of firm performance. Moreover, we observe a significant positive relationship of the Board composition with the loans to total assets ratio, even when controlling for the firm size, in both cases at the 1 per cent level of significance. On the other hand, we report a significant negative relationship of the Board size with the loans to total assets variable at the 1 per cent level of significance (when the size variable is included in the model the negative relationship remains significant at the 5 per cent level of significance). Moreover, we observe a significantly negative relationship of the Board size with the equity to total assets ratio at the 10 per cent level of significance (only when the size variable is not included in the model). For all other bank-specific variables no significant relationship is observed with the Board structure, either size or composition. The coefficient of the size variable is negative and significant when the loans to assets and the equity to assets ratios are included as dependent variables at the 1 per cent level of significance.

When the size variable is a dependent variable, we observe a significantly positive relationship with the Board size at the 1 per cent level of significance, and a significantly negative relationship with the Board composition at similar levels of significance. Some authors have predicted a positive relationship between the number of non-executive (and outside) directors and the firm's size. They have observed that big firms can afford to hire more outside directors in order to send a positive signal to

the stock market (Hermalin and Weisbach (1988)), especially when the number of directors is already high.

In all cases, the adjusted R-squares are very small. Only in the cases of the loans to total assets ratio and the size of the credit institution this measure capturing the fit of the model slightly exceeds 15 per cent. However, Gujarati (2003) suggests that one should be more concerned with the logical and theoretical relevance of the explanatory variables to the dependent variable and their statistical significance than worrying about R-square as a low R-square does not necessarily mean a bad model.

Afterwards, in the regression analysis we take into account the differences observed between the one-tier and two-tier Board systems by adding a dummy variable for the system and yearly dummies to control for unobserved macroeconomic effects. In this case, the significantly negative relationship between Board size and all alternative performance specifications persists, while the coefficient of the dummy variable for the system is significant and positive at 1 per cent level of significance (except of ROE), meaning that one-tier Board system influences bank profitability in a positive way. It is also worth mentioning that, when the models include the dummy variable to capture the Board system, the coefficient of the Board composition presents a positive and significant relationship with the ROA and Tobin's Q performance measures (at 10 per cent and 5 per cent level of significance respectively).

Then, we control for the effect firm-specific variables may have on bank performance. Thus, we introduce in the analysis a number of firm-specific factors as independent variables to examine the effects these may have, simultaneously with the Board structure, on bank performance (Table 4). The equation takes the form:

$$FP_{it} = c + \beta_1 BS_{it} + \beta_2 BC_{it} + \beta_3 BSV_{it} + \beta_4 D_{SYS} + \beta_5 D_{2003} + \beta_6 D_{2004} + \varepsilon_{it} \quad (2)$$

where FP_{it} stands for the performance of the credit institution i at year t , D_{SYS} is the dummy variable for the Board system, and D_{2003} and D_{2004} are the yearly dummy variables. We report four alternative equations of this model for each performance measure, and we present the t-statistics of the coefficients in parentheses and the relevant specification tests for each estimated equation.

(Please insert Table 4 about here)

When the ROA is used as the dependent variable, the EA ratio is not included due to its high observed correlation with this profitability index⁴⁷ (see Table 2). In all models, the Board size influences negatively the bank profitability ratio, at 1, 5 or 10 per cent level of significance. On the other hand, the coefficient of the Board composition variable is positive, but insignificant in all specifications. This is consistent with Byrd and Hickman (1992) and Rosenstein and Wyatt (1990) who observed that the increased representation by outside directors on the Board of Directors is positively associated with firm performance and shareholder wealth. The loans to total assets ratio presents a positive but insignificant effect on bank profitability (except of Model III at 5 per cent level of significance). As it was expected for this panel, credit risk, captured by the loan loss provisions to loans ratio, is negatively and significantly related to bank performance (at 1 per cent level of significance). The operating efficiency ratio illustrates a positive and significant coefficient in all specifications at 1 per cent level of significance (in accordance with Molyneux and Thornton (1992)). The sign of the coefficient of the size variable demonstrates mixed results, however, in all cases, is insignificant. The dummy variables for the Board system or the financial year do not seem to influence the bank profitability variable in a persistent way (except of the Board system dummy variable in Model I at 1 per cent level of significance and the dummy variable for year 2004 in

Models II and III at 5 per cent levels of significance). The explanatory power of the models ranges from 16 per cent to 39 per cent.

When the ROE is used as the dependent variable, in all models, the Board size influences negatively the bank profitability ratio, at 1 per cent level of significance. Contrary, the coefficient of the Board composition variable is positive, but insignificant in all cases. The coefficient of the loans to total assets ratio is also positive but insignificant, while the loan loss provisions to total loans ratio seems to have a significantly negative effect on the examined profitability ratio. The equity to total assets ratio affects in a positive, but insignificant, way bank profitability (except of Model IV at 10 per cent level of significance). The sign of the coefficient of the operating expenses to total assets variable is ambiguous, but in all specifications insignificant (contrary to what was observed when ROA is used as the dependent variable). The sign of the coefficient of the size variable is always positive, but statistically significant only in Model IV at the 1 per cent level of significance. The dummy variables for the Board system or the financial year do not seem to influence bank profitability variable in a persistent way (except of the dummy variable for year 2004 in Models I and II at 5 per cent level of significance and Model III at 10 per cent level of significance). The explanatory power of the different specifications ranges from 9 per cent to 26 per cent.

When Tobin's Q is used as the dependent variable, in all models, the Board size influences negatively the bank profitability ratio, but at 10 per cent level of significance (except of Model I where it seems to be insignificant). On the other hand, the coefficient of the Board composition variable is positive, and statistically significant at 10 per cent and 5 per cent levels of significance in Models II-III and IV respectively. One should mention that the significance of this variable was not

observed when we introduced the accounting measures of bank performance in the regression equation. The coefficient of the loans to total assets ratio is negative and insignificant in all specifications, while the coefficient of the loan loss provisions to total loans ratio demonstrates an insignificantly negative effect on the market profitability ratio. The coefficient of the equity to total assets ratio is always positive and statistically significant at 1 per cent level of significance. The coefficient of the operating efficiency variable illustrates a negative but insignificant effect on bank profitability (contrary to what was observed in the case of the ROA variable). The sign of the coefficient of the size variable is negative, but significant only in Model I (at 5 per cent level of significance). The dummy variables for the Board system and the financial year affects positively and significantly bank profitability (at different levels of significance). The explanatory power of the models ranges from 16 per cent to 22 per cent.

From the results presented above, we conclude that, in most cases, Board size is negatively and significantly related to bank profitability. This is in line with the findings reported in the literature review for other industries (Eisenberg, Sundgren and Wells (1998), Yermack (1996)). The out-of-equilibrium interpretation of this finding says that limits on Board size should be encouraged, or even be mandated. In contrast, the equilibrium interpretation of this result implies that some other factors affect bank profitability, so legal constraints on Board size would be at best useless and possibly counterproductive (Hermalin and Weisbach (2003)).

On the other hand, Board composition is positively related to bank performance, but the sign of the coefficient is not significant in most specifications (except for most of the Tobin's Q models). As it has already been mentioned in the literature review, outside directors have a more objective view of the firm and are

usually more capable of fulfilling the supervisory function (Dehaene, De Vuyst, and Ooghe (2001)). Consequently, it is predicted that there is a positive relationship between the number and proportion of outside directors in the Board of Directors and firm performance. However, this relationship is not statistically significant (see also Herbalin and Weisbach (1991), Johnson, Daily and Ellstrand (1996), Bhagat and Black (1999)).

6. Conclusions

Banks are “special” financial institutions posing unique corporate governance challenges. This paper examines the relationship between two of the most pertinent corporate governance factors and firm performance on a sample of 58 large European banks over the period 2002-2004. More specifically, the corporate governance factors examined include the size of the Board of Directors and the proportion of non-executive members on the Board of Directors, while financial performance is captured by accounting and market-based profitability measures. The empirical analysis also incorporates a number of bank-specific variables.

Our results reveal that bank profitability is negatively related to the size of the Board of Directors, while the impact of Board composition, although positive in all models, is, in most cases, insignificant. The results are robust after controlling for firm-specific variables. Our results, in the majority of the specifications, verify the empirical evidence raised from a wide literature research.

Notes

¹ OECD (2004), p. 11.

² Basel Committee on Banking Supervision (2005), par. 10.

³ Shleifer and Vishny (1997), p. 737.

⁴ The other control mechanisms encompass the conclusion of contracts between managers and investors-shareholders, the capital market/market for corporate control, the legal/political/regulatory system and the product/factor market. See Jensen (1993), Shleifer and Vishny (1997), Dennis (2001).

⁵ See, for example, La Porta et al. (2002): better protection of minority shareholders is positively associated with firm's valuation; Dahya, McConnell and Travlos (2002): increased sensitivity of turnover to performance following the adoption of the UK corporate governance code; Gompers, Ishii and Metrick (2003): positive correlation between corporate governance and stock returns; Drobetz, Schillhofer and Zimmermann (2004): positive relation between corporate practices and firm valuation; Klapper and Love (2004): better corporate governance is highly correlated with better operating performance and market valuation; Black, Jang and Kim (2004): corporate governance is likely a causal factor in explaining market value of Korean public companies.

⁶ Communication of the Commission. [(1999)232, 11.05.1999]. *Financial Services: Implementing The Framework For Financial Services – Action Plan*.

⁷ High Level Group of Company Experts. [04.11.2002]. *Report On A Modern Regulatory Framework For Company Law In Europe*.

⁸ Commission Recommendation 2004/913/EC, OJ L 385/55/29.12.2004.

⁹ Commission Recommendation 2005/162/EC, OJ L 52/51/25.02.2005.

¹⁰ Commission Proposal for a Directive concerning the annual accounts of certain types of companies and consolidated accounts, COM(2004) 725final – 2004/0250(COD).

¹¹ European Commission. [Second consultation by the Services of the Internal Market Directorate General, MARKT/13.05.2005]. *Fostering An Appropriate Regime For Shareholders' Rights*.

¹² For an excellent comparative assessment of corporate governance systems, see Weil, Gotshal and Manges (2002).

¹³ Basel Committee on Banking Supervision (1999).

¹⁴ Basel Committee on Banking Supervision (2005).

¹⁵ Basel Committee on Banking Supervision (1998).

¹⁶ Diamond (1984), Gorton and Pennacchi (1990), Allen and Santomero (1997), Allen and Santomero (1999), Cechetti (1999), Levine, Loayza and Beck (2000), Thiel (2001), Gorton and Winton (2002).

¹⁷ Goodhart et al. (1998), pp. 8-9, Davies (1998), Herring and Santomero (2000), pp. 4-5, Allen and Herring (2001), pp. 6-7.

¹⁸ Goodhart et al. (1998), pp. 4-8, Davies (1998), Herring and Santomero (2000), pp. 5-8, Allen and Herring (2001), pp. 7-10.

¹⁹ Diamond and Dybvig (1983), De Bandt and Hartmann (2000), Santos (2001), pp. 45-47. See also Herring and Santomero (2000), p. 15: “The motive for a bank run can arise because banks are highly leveraged –with an equity-to-asset ratio that is lower than other financial and non-financial firms– and hold portfolios of illiquid assets that are difficult to value. A rumor that a bank has sustained losses that are large relative to its equity may be sufficient to precipitate a run.”

²⁰ Rochet and Tirole (1996), De Bandt and Hartmann (2000), p. 18.

²¹ Dale (1996), pp. 6-11, Goodhart et al. (1998), pp. 10-14, Herring and Santomero (2000), pp. 12-17, Allen and Herring (2001), pp. 14-18, 22-28, Sbracia and Zaghini (2003), pp. 731-733.

²² Basel Committee on Banking Supervision (1999), par. 8. See also Bhattacharya and Thakor (1993), Kashyap, Rajan and Stein (2002).

²³ Special bankruptcy/liquidation procedures constitute additional-complementary policy tools to deal with failed banks. See De Bandt and Hartmann (2000), pp. 16-18, Santos (2001), pp. 47-49.

²⁴ Bhattacharya and Thakor (1993), Dale (1996), pp. 6-11, Santos (2001), pp. 49-50, Demirgüç-Kunt and Detragiache (2002), Demirgüç-Kunt and Kane (2002), Sbracia and Zaghini (2003), pp. 733-735, Barth, Caprio and Levine (2004), Kahn and Santos (2005).

²⁵ Corporate governance problems are also more acute in the case of banks because the latter not only are “looking after other’s people money in the form of deposits and investments” but, essentially, they use depositors’ money to extend loans (ie. depositors’ money are not segregated as in the case of securities firms), which renders banks particularly vulnerable to the risk of fraud and self-dealing. See Fitch Ratings Special Report (2005), Macey and O’Hara (2003), p. 98. Supervisors, governments and depositors are explicitly recognized by the Basel Committee as stakeholders of banks, due to the unique role of the latter in the national and local economies and financial systems and the associated deposit guarantees; employees, customers, suppliers and the community are also among the group of

stakeholders. See Basel Committee on Banking Supervision (1999), par. 9, note 3, Basel Committee on Banking Supervision (2005), par. 10, note 8.

²⁶ Adams, Mehran (2003), p. 124, Alexander (2004).

²⁷ See Fitch Ratings Special Report (2005), noticing that “[f]rom a corporate governance perspective banks are in effect unique ‘animals’”. See also Llewellyn (2002), pp. 166-167, explaining in more details why corporate governance arrangements are different in banks than other types of firms.

²⁸ European Central Bank (2005), p. 8.

²⁹ Basel Committee on Banking Supervision (2005), par. 8.

³⁰ Barth, Caprio and Nolle (2004), p. 36.

³¹ Basel Committee on Banking Supervision (1999), par. 3.

³² Basel Committee on Banking Supervision (2005), par. 11. See also Baxter (2003), p. 3, underlining the special role of banks in the financial system and concluding that “with the special privileges also come special obligations”. See finally Macey and O’Hara (2003), p. 99, noticing that the US case law has established a broader and stricter duty of care for bank directors precisely because of the special nature of banks.

³³ Basel Committee on Banking Supervision (1999). The other two principles cover the areas of internal and external audit as well as transparency of the corporate governance structure.

³⁴ Basel Committee on Banking Supervision (1999), par. 13-14.

³⁵ Basel Committee on Banking Supervision (1999), par. 15.

³⁶ Basel Committee on Banking Supervision (1999), par. 16-18.

³⁷ Basel Committee on Banking Supervision (1999), par. 17.

³⁸ Basel Committee on Banking Supervision (1999), par. 19-20.

³⁹ Basel Committee on Banking Supervision (1999), par. 23-25.

⁴⁰ Basel Committee on Banking Supervision (2005), par. 15-53.

⁴¹ Basel Committee on Banking Supervision (2005), par. 29-30.

⁴² Council Regulation 2157/2001, OJ L 294/1/10.11.2001, article 38.

⁴³ Council Regulation 2157/2001, OJ L 294/1/10.11.2001, articles 39-45.

⁴⁴ Basel Committee on Banking Supervision (1999), par. 11, Basel Committee on Banking Supervision (2005), par. 7.

⁴⁵ OECD (2004), p. 58.

⁴⁶ The descriptive statistics are available upon request. The Wilcoxon signed-rank test, used to examine whether the median of the sub-samples are significantly different between them, shows that, besides the LA and LLP variables, all other medians are significantly different between the two samples.

⁴⁷ However, even when the EA ratio is included in the model, the sign and significance of the results do not change.

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Table 1
Descriptive statistics (2002-2004)

Variables	Mean	Median	Std. Dev.	Min	Max	Kurtosis	Skewness
BS	17.11	16.00	6.66	7.00	45.00	3.62	1.48
BC	64.40	66.67	0.14	16.67	90.00	1.88	-1.10
ROA	0.75	0.80	0.64	-2.42	2.61	3.39	-0.58
ROE	14.25	15.12	9.97	-19.22	34.26	0.87	-0.77
TQ	1.03	1.02	0.04	0.93	1.19	0.85	0.70
LA	55.93	58.07	16.03	13.68	85.07	0.20	-0.77
LLP	0.67	0.63	0.49	0.01	3.32	6.66	1.89
EA	5.29	5.11	2.00	0.79	12.05	0.22	0.26
OEA	1.91	2.00	0.94	0.05	8.31	11.92	1.69
TA	146.2	47.75	205.95	8.87	905.93	3.34	2.02

Source: Annual reports of the credit institutions (for the Board structure), Thomson ONE Banker (for Tobin's Q) and Fitch-IBCA Bankscope database (for all other variables).

Note: BS: Board size; BC: proportion of non-executives in the Board of directors; ROA: Profit before tax / Average total assets; ROE: Profit before tax / Average total equity; TQ: Tobin's Q; LA: Loans / Total assets; LLP: Loan loss provisions / Total loans; EA: Equity / Total assets; OEA: Operating expenses / Total assets; TA: Total Assets. Figures are expressed in percentages for all variables (except of TA and BS) and in € billions for TA and number of Board members for BS over the period 2002-2004.

Table 2
Pearson correlation matrix

	BS	BC	ROA	ROE	TQ	LA	LLP	EA	OEA	TA
BS	1.00									
BC	0.15	1.00								
ROA	-0.30	0.04	1.00							
ROE	-0.28	0.04	0.82	1.00						
TQ	-0.23	0.09	0.59	0.50	1.00					
LA	-0.22	0.30	0.27	0.08	0.16	1.00				
LLP	0.07	0.01	-0.08	-0.31	-0.07	0.06	1.00			
EA	-0.14	-0.02	0.62	0.06	0.37	0.35	0.23	1.00		
OEA	-0.07	-0.02	0.46	0.01	0.24	0.17	0.43	0.78	1.00	
TA	0.32	-0.21	-0.17	0.02	-0.21	-0.44	0.06	-0.31	-0.13	1.00

Source: Annual reports of the credit institutions (for the Board structure), Thomson ONE Banker (for Tobin's Q) and Fitch-IBCA Bankscope database (for all other variables) and own estimations.

Note: BS: Board size; BC: proportion of non-executives in the Board of directors; ROA: Profit before tax / Average total assets; ROE: Profit before tax / Average total equity; TQ: Tobin's Q; LA: Loans / Total assets; LLP: Loan loss provisions / Total loans; EA: Equity / Total assets; OEA: Operating expenses / Total assets; TA: Total Assets. All variables are expressed in logarithmic form.

Table 3
Board structure, bank performance and firm-related factors

	intercept	BS	BC	TA	R²-adj	F-st
ROA	1.56 (3.20)***	-0.65 (-3.87)***	0.18 (0.99)		0.08	7.61
	2.32 (2.62)***	-0.59 (-3.40)***	0.12 (0.66)	-0.05 (-1.02)	0.08	5.42
ROE	4.09 (10.56)***	-0.49 (-3.70)***	0.14 (1.00)		0.07	6.96
	3.22 (4.60)***	-0.55 (-3.99)***	0.21 (1.40)	0.06 (1.51)	0.08	5.44
TQ	0.11 (4.72)***	-0.02 (-3.24)***	0.01 (1.59)		0.05	5.90
	0.17 (4.00)***	-0.02 (-2.71)***	0.01 (1.16)	0.00 (-1.45)	0.07	5.18
LA	4.93 (23.04)***	-0.27 (-3.81)***	0.40 (4.77)***		0.15	16.22
	6.28 (17.26)***	-0.16 (-2.09)**	0.30 (3.58)***	-0.09 (-4.45)***	0.24	18.67
LLP	-1.19 (-1.96)**	0.17 (0.84)	-0.00 (-0.01)		-0.00	0.35
	-1.59 (-1.51)	0.13 (0.59)	0.02 (0.11)	0.03 (0.46)	-0.01	0.30
EA	2.04 (7.20)***	-0.17 (-1.74)*	-0.00 (-0.01)		0.00	1.56
	3.66 (7.50)***	-0.02 (-0.22)	-0.13 (-1.15)	-0.12 (-3.98)***	0.09	6.43
OEA	0.85 (1.82)*	-0.15 (-0.91)	-0.03 (-0.14)		-0.01	0.46
	1.94 (2.30)**	-0.05 (-0.28)	-0.11 (-0.58)	-0.08 (-1.55)	0.00	1.11
TA	13.92 (19.07)***	1.27 (5.11)***	-1.09 (-3.78)***		0.17	17.60

Note: BS: Board size; BC: proportion of non-executives in the Board of directors; ROA: Profit before tax / Average total assets; ROE: Profit before tax / Average total equity; TQ: Tobin's Q; LA: Loans / Total assets; LLP: Loan loss provisions / Total loans; EA: Equity / Total assets; OEA: Operating expenses / Total assets; TA: Total Assets. The t-statistics are presented in parentheses (***, **, and * indicate 1 per cent, 5 per cent and 10 per cent significance levels, respectively).

Table 4
Empirical results

ROA	Model I	Model II	Model III
Intercept	-0.01 (0.00)	0.18 (0.14)	-1.94 (-1.46)
BS	-0.35 (-1.94)*	-0.41 (-2.55)***	-0.35 (-2.13)**
BC	0.14 (0.73)	0.13 (0.73)	0.09 (0.54)
LA	0.28 (1.60)	0.20 (1.23)	0.41 (2.42)**
LLP			-0.25 (-3.88)***
EA			
OEA		0.43 (5.64)***	0.66 (6.97)***
TA	-0.04 (-0.84)	-0.03 (-0.65)	0.01 (0.22)
D_{SYS}	0.44 (2.94)***	0.23 (1.65)*	0.20 (1.43)
D₂₀₀₃	-0.05 (-0.34)	0.03 (0.22)	0.06 (0.46)
D₂₀₀₄	0.20 (1.42)	0.31 (2.37)**	0.29 (2.26)**
R²-adjusted	0.16	0.31	0.39
F-statistic	5.08	9.40	11.18

ROE	Model I	Model II	Model III	Model IV
Intercept	3.00 (2.59)***	2.82 (2.39)**	2.53 (2.05)**	-0.02 (-0.01)
BS	-0.53 (-3.61)***	-0.56 (-3.70)***	-0.57 (-3.77)***	-0.56 (-3.70)***
BC	0.17 (1.03)	0.17 (1.04)	0.18 (1.08)	0.11 (0.75)
LA	0.05 (0.36)	0.03 (0.17)	0.01 (0.06)	0.24 (1.57)
LLP				-0.28 (-4.93)***
EA		0.12 (0.88)	0.27 (1.20)	0.44 (1.91)*
OEA			-0.10 (-0.86)	0.13 (1.10)
TA	0.05 (1.19)	0.06 (1.39)	0.07 (1.58)	0.13 (2.90)***
D_{SYS}	-0.00 (-0.02)	-0.05 (-0.40)	-0.07 (-0.53)	-0.19 (-1.35)
D₂₀₀₃	0.00 (0.05)	0.01 (0.10)	0.00 (0.02)	0.03 (0.26)

D₂₀₀₄	0.25 (2.09)**	0.25 (2.13)**	0.23 (1.94)*	0.16 (1.40)
R²-adjusted	0.09	0.09	0.09	0.26
F-statistic	3.22	2.90	2.66	6.03

TQ	Model I	Model II	Model III	Model IV
Intercept	0.14 (2.06)**	0.11 (1.65)*	0.10 (1.53)	0.12 (1.70)*
BS	-0.01 (-1.19)	-0.02 (-1.84)*	-0.02 (-1.87)*	-0.02 (-1.78)*
BC	0.02 (1.56)	0.02 (1.86)*	0.02 (1.89)*	0.02 (2.08)**
LA	-0.00 (-0.23)	-0.01 (-1.01)	-0.00 (-1.06)	-0.01 (-1.39)
LLP				-0.00 (-1.00)
EA		0.02 (3.56)***	0.03 (2.64)***	0.03 (2.35)**
OEA			-0.00 (-0.54)	-0.00 (-0.61)
TA	-0.01 (-1.98)**	-0.00 (-1.05)	-0.00 (-0.92)	-0.00 (-1.00)
D_{SYS}	0.03 (3.30)***	0.01 (1.85)*	0.01 (1.80)*	0.02 (2.08)**
D₂₀₀₃	0.01 (1.87)*	0.01 (1.83)*	0.01 (1.77)*	0.01 (1.67)*
D₂₀₀₄	0.02 (3.02)***	0.02 (2.99)***	0.02 (2.86)***	0.02 (2.51)***
R²-adjusted	0.16	0.22	0.21	0.20
F-statistic	5.34	6.60	5.88	4.80

Note: BS: Board size; BC: proportion of non-executives in the Board of directors; ROA: Profit before tax / Average total assets; ROE: Profit before tax / Average total equity; TQ: Tobin's Q; LA: Loans / Total assets; LLP: Loan loss provisions / Total loans; EA: Equity / Total assets; OEA: Operating expenses / Total assets; TA: Total Assets. The t-statistics are presented in parentheses (***, **, and * indicate 1 per cent, 5 per cent and 10 per cent significance levels, respectively).

Annex 1

List of banks

Deutsche Bank AG
BNP Paribas
Bayerische Hypo-und Vereinsbank AG
ABN Amro Holding NV
Societe Generale
Commerzbank AG
Credit Agricole SA
Santander Central Hispano SA
Banca Intesa SpA
Banco Bilbao Vizcaya Argentaria SA
Danske Bank
Eurohypo AG
UniCredito Italiano SpA
San Paolo IMI
Depfa Bank Plc
Erste Bank der Oesterreichischen Sparkassen AG
Capitalia SpA
Standard Chartered Plc
Natexis Banques Populaires
Allied Irish Banks plc
Banca Nazionale del Lavoro SpA – BNL
Bank of Ireland
Alliance & Leicester Plc
Old Mutual Plc
Northern Rock Plc
Banca Antoniana Popolare Veneta SpA
Banco Espapol de Credito SA, Banesto
National Bank of Greece SA
Berlin Hyp-Berlin-Hannoverschen
Hypotheckenbank AG
Banco Popular Espanol SA
Banco Espirito Santo SA
Bradford & Bingley Plc
Aareal Bank AG
Banca Popolare di Lodi
Banca Popolare di Milano SCaRL
Irish Life & Permanent Plc
Banco de Sabadell SA
Baden-Wuerttembergische Bank AG
Alpha Bank AE
Sampo Plc
Bankinter SA
FinecoGroup SpA
Deutsche Hypothekenbank (Actien-Gesellschaft)
Jyske Bank A/S
Credito Emiliano SpA
Anglo Irish Bank Corporation Plc
EFG Eurobank Ergasias SA
Emporiki Bank of Greece SA
Piraeus Bank SA
OKO Bank-OKO Osuuspankkien Keskuspankki
EGG Plc
HSBC Trinkaus & Burkhardt KGaA
Banca Popolare di Sondrio SCaRL
Oberbank AG
Banco di Sardegna SpA
DVB Bank AG
Banco Pastor SA
Credito Bergamasco