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CORPORATE GOVERNANCE AND BANK PERFORMANCE: EVIDENCE FROM MACEDONIA

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Abstract

The role of banks is integral to the economic development of any country. Given the renewed attention on the corporate governance in banks with the global financial crises, this paper investigates the relevance of board size, board composition and CEO qualities in the banks and their performance. Thus, the following paragraphs will elaborate on the development of hypotheses to test whether good corporate governance system can contribute towards higher banks performance. This research is different from other studies, both practical and theoretical, as the object of study is commercial banks in developing country.

Key words: *bank performance, board composition, board size, capital requirement, corporate governance, developing countries, diversity, Macedonia.*

JEL Classification: G20, G21, G30, G34, K23

Theoretical Background

Every company has a corporate governance (Steger & Amann, 2008, p.3). Academic interest about corporate governance issues arises after publishing a pathbreaking book about separation of control and ownership in the corporations, wrote by Berle and Means. They showed that shareholder dispersion creates substantial managerial discretion, which can be abused. This was the starting point for the subsequent academic thinking on corporate governance (Tirole, 2006, p.15). However, if management was the focal point for the 20th century, corporate governance is set to be the primary focus for the 21st (Tricker, 2012). The term *corporate governance* derives from an analogy between the government of cities, nations or states and the governance of corporations (Becht, Bolton, Röell, 2005, p.2). Word *governance* is ancient, and comes from the Greek word for steering (Carrol & Bucholtz, 2009, p.123) but the phrase *corporate governance* is young.

In wave of the recent corporate scandals, corporate governance practices have received tremendous attention from all interest group inside and outside from corporations. Increased media coverage has turned *transparency, managerial accountability, corporate governance failures, weak boards of directors, hostile takeovers, protection of minority shareholders, and investor activism* into household phrases (Tirole, 2006, p.15). The governance of the corporation is now as important in the world economy as the government of countries (Wolfensohn, 1999, p.38). Good corporate governance from the

banking perspective demands that banks will operate in a safe and sound manner, and will comply with applicable laws and regulations while protecting the interests of depositors (Wilson, 2006). The efforts for establishing good corporate governance system in banks can be explained only with higher performance (Tandelilin, Kaaro, Mahadwartha and Supriyatna, 2007). Fine governance is an essential standard for establishing the striking investment environment which is needed by competitive companies to gain strong position in efficient financial markets. That is fundamental to the economies with extensive business background and also facilitates the success for entrepreneurship (Khan, 2011, p.1). In particular, the countries that have implemented sound corporate governance practices generally experienced a vigorous growth of corporate sector, and grasp more ability in attracting capital to lubricate the economy (Sheikh & Wang, 2012). *McKinsey Quarterly* surveys suggest that institutional investors will pay as much as 28% more for the shares of well governed companies in emerging markets (Thomsen, 2000). Many scholars until now examined relationship between corporate governance and company performance from different perspectives (Shleifer & Vishny, 1997; John & Senbet, 1998; La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1999; Fosberg & Nelson, 1999; Hermalin & Weisbach, 2003; Gompers, Ishii and Metrick, 2003; Gillan, Hartzell and Starks, 2003; Drobetz, Schillhofer and Zimmerman, 2003; Drobetz, Schillhofer and Zimmerman, 2004; Mak & Kusnadi, 2004; Rebeiz & Salameh, 2006; Lin & Lee, 2008; Bebchuk, Cohen and Ferrel, 2009; Bauer, Eichholtz and Kok, 2010; Braga-Alves & Shastri, 2011; Afsham, Chetri and Pradhan, 2011; Iqbal & Zaheer, 2011; Htay, Aung, Rashid and Adnan, 2012). Hence, previous studies in this field were serious basis for proper shaping of this empirical research in macedonian banks.

Before assessing the role of banks in corporate governance, we must first define what we mean by this term. The Cadbury Committee define the corporate governance as the system by which companies are directed and controlled (Cadbury, 1992, p.15). Yet, while shareholders delegate substantial powers to management, they need assurance that power will not be abused. *How do shareholders know that the assets they own are not being mismanaged, or even embezzled?* (Monks & Minow, 2004, p.196). One of the most exploited definition about corporate governance written by Shleifer and Visny in 1997 give answer on question about shareholders security. They define corporate governance in terms of financial interests of investors. In particular, they refer to corporate governance as dealing in which suppliers of finance to corporations assure themselves of getting a return on their investment (Shleifer & Visny, 1997, p.737). Corporate governance can be considered as an environment of trust, ethics, moral values and confidence – as a synergic effort of all the constituents of society (Crowther & Aras, 2009). Our integral definition considers the corporate governance as a system which ensures that a company is run in the best strategic direction for all stakeholders.

Corporate Governance in the banking system has assumed heightened importance and has become an issue of global concern because it is required to lead to enhanced services and deepening of financial intermediation on the part of the banks and enables proper management of the operations of banks. To ensure this, both the board and management have key roles to play to ensure the institution of corporate governance (Nworji, Adebayo and David, 2011). Although, the banking sector serves as the *nerve centre* or *brain* of any modern economy, being the repository of people's wealth and supplier of credits which lubricates the engine of growth of the entire economic system (Stiglitz, Jaramillo-Vallejo and Park, 1993; Nworji, Adebayo and David, 2011; Jimoh & Iyoha, 2012). The banking

sector is not necessarily totally corporate. Banking as a sector has been unique and the interests of other stakeholders appear more important to it than in the case of non-banking and non-finance organizations. In the case of traditional manufacturing corporations, the issue has been that of safeguarding and maximizing the shareholders' value. In the case of banking, the risk involved for depositors and the possibility of contagion assumes greater importance than that of consumers of manufactured products. Banks due atypical contractual relationship, in their corporate governance model should include the depositors and shareholders (Macey & O'hara, 2003). Further, the involvement of government is discernibly higher in banks due to importance of stability of financial system and the larger interests of the public (Leeladhar, 2004, p.1102). Stability of banks as a dominant figure in whole financial systems contribute for good functioning of national economy and promotes economic growth (Hermes, 1994; Levine, 1997; Rajan & Zingales, 1998; Beck, Levine and Loayza, 2000; Wurgler, 2000; Sanda, Mikailu and Garba, 2005; Caprio, Laeven and Levine, 2007; Nworji, Adebayo and David, 2011). Good corporate governance plays a vital role in underpinning the integrity and efficiency of financial markets (Ghillyer, 2012, p.88). The Basel Committee on Banking Supervision (BCBS) placed emphasis on establishing and improving the corporate governance of financial entities, as well as compliance with supervisory standards. According to BCBS (2005), corporate governance for banking organizations is arguably of greater importance than for other companies, given the crucial financial intermediation role of banks in an economy.

From a banking industry perspective, corporate governance involves the manner in which the business and affairs of banks are governed by their boards of directors and senior management (Huq & Bhuiyan, 2011). Board of directors is elected by the shareholders as the ultimate decision-making body of the company which has the responsibility of formulating bank loan (Sumner & Webb, 2005). A higher cost of capital will hamper and hurt economic development. The governance of banking companies may be different from that of unregulated, nonfinancial companies for several reasons. For one, the number of parties with a stake in an institution's activity complicates the governance of financial institutions. In addition to investors, depositors and regulators have a direct interest in bank performance. On a more aggregate level, regulators are concerned with the effect governance has on the performance of financial institutions because the health of the overall economy depends upon their performance (Adams & Mehran, 2003, p.124).

The corporate governance of banks in developing economies is important for several reasons. First, banks have an overwhelmingly dominant position in developing-economy financial systems, and are extremely important engines of economic growth (King & Levine 1993 cited in Arun & Turner, 2004; Levine 1997 cited in Arun & Turner, 2004). Second, as financial markets are usually underdeveloped, banks in developing economies are typically the most important source of finance for the majority of companies. Third, as well as providing a generally accepted means of payment, banks in developing countries are usually the main depository for the economy's savings. Fourth, many developing economies have recently liberalised their banking systems through privatisation/disinvestments and reducing the role of economic regulation. Consequently, managers of banks in these economies have obtained greater freedom in how they run their banks (Arun & Turner, 2004, p.3; Huq & Bhuiyan, 2011). Liberalization of financial system through privatization, the reduction of the role of regulating agencies, mergers and acquisitions have resulted in private and foreign control at the expense of governments and

domestic authorities. These latter have allowed bank managers clearly managerial and decision-making freedom (Berger, Clarke, Cull, Klapper and Udell, 2005). Finally, confirm for importance of corporate governance for banks in developing countries is a statement of Managing Director of Croatian Banking Association Zoran Bohacek, who say that *is not a question of whether we need corporate governance, but how to do it and survive.*

Legal Framework

Corporate governance of Macedonian banks is a crucial item which is worth considering with great importance by the economists nowadays, as the banks are firm foundation of the economy of a country. This notation emphasizes the importance of good corporate governance which can be achieved with a stable law regulating this subject.

Historically, the basics of the corporate governance of the banks in the Republic of Macedonia are integral part of the Law of Banks and Savings-Banks, 1993. This Law does not clearly define the responsibilities of the Managing board and Executive committee which encouraged confusion and institutional instability. Taking into account the flaws of the above mentioned Law, the Law of Banks was established in the year 2000. Article 54 of this Law, states that the governing bodies of a bank are the following: stockholders, Managing board, Executive committee, Risk Management board, Audit board as well as other authorities established by the statute. In this case, the supervision of the activities taken by the bank is performed by the Managing board which is in charge of carrying out the same activities. Finally, the recently used law concerning the establishment, management, supervision, financial activities is the Law of Banks enacted 2007. The previously mentioned Law (Article 82) supports the two-tier board model consisted of stockholders, Supervisory board, Managing board, Risk management board, Audit boards as well as other authorities established by the statute. According to this Law (Article 88), the Supervisory board is consisted of at least 5, but not more than 9 members; (Article 92) the Managing board is consisted of at least 2, but not more than 7 members. Unlike the previously mentioned Laws, this act makes clear distinction between the responsibilities of the boards.

With regard to the Law of Banks as a *lex specialis*, there are few more laws that need to be considered when regulating the activities of the banks. The Code of Corporate governance whose foundations where laid in 2003. Banks, as joint-stock companies, have Code of Corporate governance different than the others companies (Drakulevski & Miladinova, 2010). One of the important laws is the Law on Obligations enacted in 2001 which concerns the relation between the bank and third parties. Additionally, the Law on Securities, 2005, is applied for regulation of the methods and conditions for the issuance and trading of securities; the manner and the conditions for the functioning of the securities market and authorized market participants, disclosure obligations of joint stock companies with special reporting obligations; members of management, directors and individual shareholders; prohibited acts in connection with the operation of securities etc. Moreover, the Law of Shareholding Companies' Takeover in 2002, concerns the manner and conditions for purchase of securities of the joint-stock company - issuer of securities in the official stock exchange markets. Of a great importance is the Manual on Corporate Governance of the Shareholding Companies in Macedonia, 2008, as well as the OECD Principles of Corporate Governance, 2004, especially useful for the banks that have super

listing. Other guidelines for corporate governance used by the banking sector in Macedonia are: White Paper on Corporate Governance in South East Europe, 2003; Developing Corporate Governance Codes of Best Practices, 2005; The EU Approach to Corporate Governance, 2008; The International Accounting Standards; Basel standards set recommendations issued by the Basel Committee on Banking Supervision to bank regulators, which defines the minimum standards that need to be implemented by the banks for risk management, and so on.

Brief Overview of the Banking Sector in Macedonia

Macedonia has inherited the banking system from former Yugoslavia in ownership of the country and with a structure in correlation with the prevailing planed economy. However, the reconstruction of the banking system started relatively late, in 1995, writing-off the old foreign currency saving, assets and liabilities in terms of foreign loans and sanction of the biggest Macedonian Bank. In the process of economic transition, Macedonian banks experienced a number of reorganizations such as forced mergers, bail-outs, and changes in management. However, the *heart* of Macedonian economy is still the commercial banks.

In 2011, the activities of the banks continued to grow, although at a slower pace compared to the previous year, as reflected positively to the further increase of the degree of financial intermediation in the country. The growth of the deposits noticed a slowdown, which generally corresponds to the slowdown of the economic growth in this period. What is more, the economic entities continued to save more in local currency. As well as that, Macedonian banking system has stable and high solvency and capitalization, which is further improved during 2011. Macedonian banks has not been in a need of state financial support in the past few years and hence there was no formal or informal state capital intervention in the domestic banking sector (NBRM, 2012).

At the end of 2011, the banking system in Macedonia consisted of seventeen banks and eight savings banks. For analytical purposes, the National Bank (NBRM) groups the banks into three groups, according to the size of their assets: small, medium and large banks. Banking network is spread over almost all cities in the country and consists of 413 business units (which includes the headquarters of banks). But the main concentration of the network remained in the capital city. Compared with the previous year, the number of the business units fell by twenty-three. In the banking sector the downward trend of the number of employees continued. In 2011, the number of employees in banks fell by 41. Additionally, continued the trend of quality improvement of the qualification structure of the employees in the banking system (NBRM, 2012).

According to the legal acts, each bank in Macedonia has established its own system of corporate governance compatible with the nature and scope of activities performed. The four most important banks' authorities have a total of 304 members, representing 5.1% compared with the total number of employees in the banks at the end of 2011. Nevertheless, most of these people are members of the Supervisory board (102 members). Given the statutory requirement that at least one third of the members of the Supervisory board must be independent members; these individuals participate with 34.7% of the total number of members of the board (or a total of 34 people). In terms of the functioning of the Managing board, in ten banks this board is consisted of two members, as the legal

minimum is, and in the remaining seven banks, of three to five members. All of the banks have special organizational risk management unit, while fourteen banks have special organizational unit for the control of concordance with the regulations (NBRM, 2012).

When taking into account the ownership structure of the banking system, the financial institutions have dominant share in the ownership structure of the banking system. The foreign investments have increased almost double in 2011. Thirteen out of seventeen banks in Macedonia have dominant foreign ownership. Concentration of banking system, measured through Herfindahl-Hirschman index is relatively high in all segments of the banking operations. Despite the reduction of the Herfindahl-Hirschman index, at the end of 2011, there are still segments in which the concentration is above the acceptable upper limit. Highest concentration is observed in loans and deposits, while the concentration of the credits for companies is slightly above acceptable level. Only in total assets and deposits of enterprises, the concentration is within the acceptable level (NBRM, 2012).

Literature Review and Hypotheses Development

In 1919, the Michigan Supreme Court in the case of *Dodge v. Ford Motor Co.* (Du Plessis, Hargovan and Bagaric, 2011) ruled that a business exists for the profit of shareholders and the board of directors should focus on that objective (Ferrel, Fraedrich and Ferrel, 2013, p. 41). Board serves as a bridge between shareholders and managers (Cadbury, 2002) playing a major governing role in the corporate governance framework. The study of corporate governance is complicated by the fact that the structure, role and impact of boards have been studied from a variety of theoretical and practical perspectives. Numerous studies are dedicated on detection a link between corporate governance and bank performance (Jensen & Meckling, 1976; Hovey, Li and Naughton, 2003). There are also studies which analyzing the role of corporate boards, specifically its functions and its composition, didn't found clear evidence that corporate governance has impact on corporate performance (Denis & Denis, 1995; Agrawal & Knoeber, 1996). These studies also indicate that in cases where is observed a statistically significant relationship, there is no consistency across countries in the same direction (de Jong, Gispert, Kabir and Renneboog, 2002). By including the board of directors' characteristics such as director's shareholding, gender, director size, director's race and directors' independence, it brings the new avenue for the researcher and regulators of the importance of board of directors' characteristics on the performance (Shukeri, Shin and Shaari, 2012). In this research qualitative and quantitative data has been used to penetrate an in-depth understanding on corporate governance and financial performance. Were used statistical and econometric models for obtain and processing information about respondents.

- **Board Size**

Board size is the most elaborated attribute in the literature, and in general the relationship between board size and performance is found to be inversely related. There are the statement which suggest that *only an odd number of people can lead a corporation, and three are too many* (Vance, 1983, p.33). Board size refers to the number of directors on the board. Today, numerous studies find that larger boards lead towards worse performance which is usually measured by Tobin's q (Jensen & Meckling, 1976; Lipton & Lorsch, 1992; Jensen, 1993; Yermack, 1996; Eisenberg, Sundgren and Wells, 1998; Mishra, Randoy and Jenssen, 2001; Singh & Davidson, 2003; Hermalin & Weisbach, 2003; Mak &

Kusnadi, 2004; de Andres, Azofra and Lopes, 2005; Cheng, 2008; Adusei, 2011; Chang & Duta, 2012). *Spencer Stuart Board Index* (2008) reports that worldwide, board size has been shrinking over the years and that there is a continued trend towards smaller boards. Contrary of these findings, large board size improves corporate performance through enhancing the ability of the company to establish external connection with the environment, providing on that way rare resources for company operations (Bacon, 1973; Druckeriv, 2002; Dalton, Daily, Johnson and Ellstrand, 1999; Kiel & Nicholson, 2003; Adams & Mehran, 2003; Anderson, Mansi and Reeb, 2004; Coles, Daniels and Naveen, 2008; Belkhir, 2009; Arslan, Karan and Eksi, 2010; Chang & Duta, 2012). These studies found that board size have a positive impact on the stock market performance of company. In fact, *the greater the need for effective external linkage, the larger the board should be* (Pfeffer & Salancik 1978, p.172). Finally, Eisenberg, Sundgren and Wells (1998) investigating 879 Finnish companies conclude that companies with smaller boards had higher ROA, arguing that the impact of board size may in part be contingent on the size and health of the company. Correspondingly, the following are the hypotheses that will be tested empirically with regard to the impact of the Board size:

H_{1a}: The size of the Supervisory board is significantly and negatively related to bank profitability measured by ROA.

H_{1b}: The size of the Supervisory board is significantly and negatively related to bank profitability measured by ROE.

H_{1c}: The size of the Supervisory board is significantly and negatively related to bank efficiency measured by CIRATIO.

H_{1d}: The size of the Supervisory board is significantly and positively related to bank capital requirement measured by CAR.

• **Board Composition**

Board composition is an important governance mechanism because the presence of non-executive directors represents an effective tool of monitoring the actions of the executive directors and of providing that they take policies which will enhance shareholders wealth (Fama, 1980; Coughlan & Schmidt, 1985). Non-executive directors are independent from the company and from top managers. Board independence means the proportion of independent non-executive directors relative to the total number of directors (Chaghadari, 2011). Empirical research present mixed results about relationship between company performance and board independence from different perspective (Kesner, 1987; Schellenger, Wood and Tashakori, 1989; Zahra & Pearce, 1989; Baysinger & Hoskisson, 1990; Hermalin & Weishbach, 1991; Ezzamel & Watson, 1993; Pi & Timme, 1993; Barnhart, Marr and Rosenstein, 1994; Johnson, Daily and Ellstrand, 1996; Beasley, 1996; Agrawal & Knoeber, 1996; Yermack, 1996; Subrahmanyam, Rangan and Rosenstein, 1997; Weir, 1997; Rosenstein & Wyatt, 1997; Dalton, Daily, Ellstrand and Johnson, 1998; Klein, 1998; Millstein & Macavoy, 1998; Bhagat & Black, 1999; Weir & Laing, 1999; Liang & Li, 1999; Rhoades, Rechner and Sundaramurthy, 2000; Chen & Jaggi, 2000; Dehaene, De Vuyst and Ooghe, 2001; Prevost, Rao and Hossain, 2002; Cho & Kim, 2003; Weisbach & Hermalin, 2003; Dahya & McConnell, 2003; Dulewicz & Herbert, 2004; Peng, 2004; Davidson & Rowe, 2004; Harris & Raviv, 2006; Haniffa & Hudaib, 2006; Krivogorsky, 2006; Rebeiz & Salameh, 2006; Dahya & McConnell, 2007; Finegold, Benson and Hecht, 2007; Sanda, Garba and Mikailu, 2008; Linck, Netter and Yang, 2008;

Coles, Daniels and Naveen, 2008; Abidinn, Kamal and Jusoff, 2009; Eklund, Palmberg and Wiberg, 2009; Nguyen & Nielsen, 2010; Arslan, Karan and Eksi, 2010; Chaghadari, 2011; Shan & Xu, 2012; Sheikh & Wang, 2012; Htay, Aung, Rashid and Adnan 2012; Chen, 2012; Pokrashenko, 2012). Importantly, board with many independent directors show a high effectiveness and enhance company performance (Daily & Dalton, 1993). Here from, the hypotheses to test the significance of the impact of Board composition are defined with the following statements:

H_{2a}: The Supervisory board independence is significantly and positively related to bank's profitability measured by ROA.

H_{2b}: The Supervisory board independence is significantly and positively related to bank's profitability measured by ROE.

H_{2c}: The Supervisory board independence is significantly and positively related to bank's efficiency measured by CIRATIO.

H_{2d}: The Supervisory board independence is significantly and positively related to bank's capital requirement measured by CAR.

Board diversity as an integral composition issue has recently caught the attention of scholars, managers, shareholders, and government (Johansen, 2008; Hagendorff & Keasey, 2008; Suklev & Sukleva, 2012). Arguments for diversity in the boardroom are both economic and ethical (Van der Walt & Ingley, 2003). Board diversity also generates various costs associated with coordination problems and decision making times (Forbes & Milliken, 1999). Further, board diversity may corrode cohesion and lead to a less cooperative and conflicts within group (Blau, 1977; Lau & Murnighan, 2005). This paper examines boards' exhibit heterogeneity due to education (Ph.D holds), nationality and gender.

• **CEO Qualities**

Power of CEO is determined by the CEO tenure (Graefe-Anderson, 2009; Wulf, Stubner, Miksche and Roleder, 2010; Dikolli, Mayew and Nanda, 2011; Horstmeyer, 2011). The effect of a powerful CEO can be counterbalanced by other executives (Berger, Kick and Schaeck, 2012). Therefore, it is obvious that powerful CEO has a negative impact on bank performance. Consequently, the significance of the impact of CEO qualities will be tested though the following hypotheses:

H_{3a}: The CEO Power is significantly and negatively related to bank's profitability measured by ROA.

H_{3b}: The CEO Power is significantly and negatively related to bank's profitability measured by ROE.

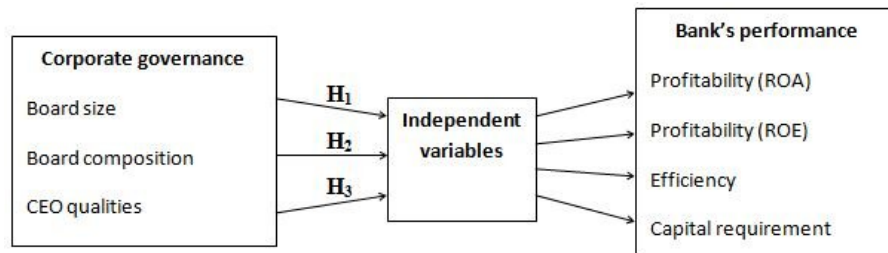
H_{3c}: The CEO Power is significantly and negatively related to bank's efficiency measured by CIRATIO.

H_{3d}: The CEO Power is significantly and positively related to to bank's capital requirement measured by CAR.

Financial dependence of CEO (Suklev, 2011) also can be used as a discipline mechanism which ensure better performance for banks. To the extent that CEO and other board members own stakes of the company, they develop shareholder-like interests and are less likely to engage in behavior that is detrimental to shareholders (Fama, 1980; Demsetz &

Lehn, 1985; Barnhart & Rosenstein, 1994; Fenn & Liang, 2001; Abidinn, Kamal, Jusoff, 2009; Arslan, Karan and Eksi, 2010). The CEO will then have the same objectives as the shareholder. In addition, Morck, Shleifer and Vishny (1988) reveal that if the percentage of the managers' stakes moves from 0 to 5%, performance goes up from 5 to 25%. If the percentage exceeds 25%, performance improves but very slowly.

Figure 1: The framework for the relationship between the corporate governance and bank's performance



Empirical Research

• The Model

In this section is investigated the relation between the corporate governance with the bank's performance using OLS regressions. Four measures are used to observe bank performance: **Return on Assets (ROA)** calculated as profit after taxes divided by total assets of a bank; **Return on Equity (ROE)** calculated as profit after taxes divided by total equity of a bank; **Cost-Income Ratio** which is used as a quick test of efficiency which reflects the non-interest costs as proportion of net income; and **Capital Adequacy Ratio (CAR)** expressed as proportion of financial capital to the risk-weighted assets (see BCBS, 2011). These four measures represent the dependent variables in the study. On the other hand, the board structure is described in three dimensions: board size, board composition, and CEO qualities. Note that the banking system in Macedonia exhibits a two-tier corporate governance composed of Supervisory (SB) and Managing board (MB). Since the responsibilities of the members in the Supervisory board are attributed greater importance for the bank's corporate governance, the Supervisory board is given preference to study its composition and size. Hence, the majority of independent variables are derived from the data collected about the Supervisory board, while few of them relate to the Managing board. Nonetheless, since the CEO always acts as President of the Managing board and more importantly bears much of the responsibility for the bank's performance, his qualities are given specific importance in the study and are analyzed within a separate dimension. Each of the independent variables is briefly explained in turn. The size of **Supervisory Board (SBSIZE)** and the size of **Managing Board (MBSIZE)** are both measured using a natural logarithm of the total number of members in each of them, which is aligned with the studies of Anderson and Reeb (2003); de Andres, Azofra, and Lopez (2005); and Jackling and Johl (2009). Board composition as a dimension of the board structure is represented with the following variables: **Supervisory Board Independence (SBINDEPEND)** which reflects the number of non-executive members as proportion of total number of members in the board; **Foreign members of Supervisory Board Ratio (FSBRATIO)** defined as proportion of members that haven't acquired Macedonian citizenship to the total number of board members; **Women members of Supervisory**

Board Ratio (WSBRATIO) which, similarly, is defined as proportion of the women members to the total number of members in the board; and **Supervisory Board Educational Ratio** expressing the proportion of members in the Supervisory board holding Ph.D. The third dimension described with the CEO qualities includes the following measures as dummy variables: dummy for CEO to distinguish whether the CEO is foreign citizen (given value 1) or not (given value 0); dummy for CEO Ownership which gets value 1 if the CEO owns bank's shares and 0 if not; and dummy variable for the CEO Power expressed as the longevity of the CEO serving on this position (value 1 for more than a four-year term or value 0 for exactly one term). The other variables inputted in the study are not directly related to the board structure, and are, thus, grouped as control variables. These include: **Bank's age (AGE)** calculated as a natural logarithm of the difference between the principle year of analysis and the year of bank's foundation; **Credits/Deposits Ratio (CDRATIO)** defined as proportion of bank's total credits lent to its customers to the total deposits it keeps; and **Bank's nature (BANTURE)** used as a dummy variable to denote whether the bank is a subsidiary of a multinational bank (given value 1) or not (given value 0). Description of all these variables is presented in Table 1.

Table 1: Definition of variables

| Variable | Definition |
|--|--|
| Measures of Bank Performance (dependent variables) | |
| Return on Assets (ROA) | Profit after taxes/Total Assets |
| Return on Equity (ROE) | Profit after taxes/Total Equity |
| Cost-Income Ratio (CIRATIO) | Non-interest costs/Net income |
| Capital Adequacy Ratio (CAR) | Financial capital/Risk-weighted Assets |
| Measures of Board Structure (independent variables) | |
| Board size: | |
| Size of Supervisory Board (SBSIZE) | natural logarithm of the total number of members in the Supervisory board |
| Size of Managing Board (MBSIZE) | natural logarithm of the total number of members in the Managing board |
| Board composition: | |
| Supervisory Board Independence (SBINDEPEND) | proportion of non-executive members in the Supervisory board |
| Foreign members of Supervisory Board Ratio (FSBRATIO) | proportion of foreign members in the Supervisory board |
| Women members of Supervisory Board Ratio (WSBRATIO) | proportion of women members in the Supervisory board |
| Supervisory Board Educational Ratio (EDUSBRATIO) | proportion of members in the Supervisory board holding Ph. D. |
| CEO qualities: | |
| Dummy for CEO (CEO) | 1: if the CEO is foreign citizen; 0: if otherwise. |
| Dummy for CEO Ownership (CEOOWN) | 1: if the CEO owns bank's shares; 0: if otherwise. |
| Dummy for CEO Power (CEOPOWER) | 1: if the CEO serves longer than one-term (4 years); 0: if otherwise. |
| Control variables (independent variables) | |
| Bank's age (AGE) | natural logarithm of the difference between the principle year of analysis and the year of bank's foundation |
| Credits/Deposit Ratio (CDRATIO) | Credits/Deposits |
| Dummy for Bank's nature (BNATURE) | 1: if a bank is subsidiary of a multinational bank; 0: if otherwise |

Because of the large number of independent variables used in the study, three multiple regression analyses with limited variables have been developed in order to assess the relationship. Each of the analysis uses a multiple regression model stated with the following equation:

$$y_i = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_n x_{ni} + \delta_1 d_{1i} + \delta_2 d_{2i} + \dots + \delta_n d_{ni} + \ddot{e}_i$$

Where:

i represents the cross-sectional dimension of the data;

y_i represents the dependent variables in the model;

$x_{1i}, x_{2i}, \dots, x_{ni}$ represent the independent variables;

$d_{1i}, d_{2i}, \dots, d_{ni}$ represent the dummy variables;

α denotes the slope coefficient;

$\beta_1, \beta_2, \dots, \beta_n$ and $\delta_1, \delta_2, \dots, \delta_n$ denote the coefficients of the independent and dummy variables respectively;

\ddot{e}_i represents the error term.

Firstly, a specific model was developed to assess the relation between the size of the Supervisory and Managing board with the bank's performance, which can be expressed with the following regression equation:

$$y_i = \alpha + \beta_1 * SBSIZE + \beta_2 * MBSIZE + \beta_3 * AGE + \ddot{e}_i$$

Next, another one was developed particularly to measure the relation between the board structure with the bank's performance and is stated with:

$$y_i = \alpha + \beta_1 * SBINDEPEND + \beta_2 * FSBRATIO + \beta_3 * WSBRATIO + \beta_4 * EDUSBRATIO + \ddot{e}_i$$

The last of the models developed is to measure the relationship between the CEO qualities defined as dummy variables with the bank's performance using the following equation:

$$y_i = \alpha + \beta_1 * CDRATIO + \delta_1 * CEO + \delta_2 * CEOOWN + \delta_3 * CEOPOWER + \delta_4 * BNATURE + \ddot{e}_i$$

Different methods are available to solve for the parameters in the given equation, but the most simple one is by using pooled ordinary least squares (OLS), which is demonstrated in prior studies such as Boone, Field, Karpoff and Raheja, (2007); Coles, Daniel, and Naveen (2008); and Linck, Netter, Yang (2008). This method minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation to estimate the unknown parameters in the regression model.

• Sample and Data

The sample used in the development of the model includes 15 out of 17 banks, thus representing 88% of its statistical population. The data collected for the study are extracted from several sources, including the official websites of the National Bank of the Republic of Macedonia (NBRM) and the Macedonian Securities Exchange Commission, the official sites of the banks in question, and the financial and proxy statements published by the banks at the end of the year. In this way, the numerical data to calculate the dependent variables and some of the control variables are derived from the financial statements, the data about the board size and composition are extracted from the official sites of the banks and the official site of NBRM, the information for the CEO qualities are predominantly based on the publications on the website of the Macedonian Securities Exchange

Commission, while the data for some variables such as the bank's age and its ownership structure come from the proxy statements and some web pages on the banks' official websites. The empirical data used as inputs in the study for the banks have been observed for the 2008-2011 period with a total number of 60 observations.

- **Analysis and Findings**

The findings yielded from the first regression model demonstrate that the size of both, the Supervisory and the Managing board is positively related to the bank's profitability measured by ROA (see Appendix 1A). It means that any increase in the number of members in one of these boards is likely to result in increased bank's profitability. This may be explained by the fact that the appointment of new members in each of the two boards will produce stronger decision-making process that may boost bank's performance. In this way, the hypothesis stated as H_{1a} is unsupported. With regard to the impact on the profitability measured by ROE, none of the variables in the model has significant relation as shown in Appendix 1B, which reflects a rejection of H_{1b} . Furthermore, a significant and positive relationship exists between the size of the Managing board and the Cost-Income Ratio (see Appendix 1C), which implies that the Macedonian banks with larger Managing board will be able to improve bank's efficiency better than those with smaller one. In relation to the capital requirement measured by the Capital Adequacy Ratio, the banks with smaller Managing board tend to hold a larger percentage of their liquidity assets against their risk-weighted assets as implied through the significant and negative relation in Appendix 1D. A reasonable explanation for this could be that the smaller Managing board cannot efficiently manage the risk of the bank's capital, which subsequently leads towards increased risk aversion. No significance relationship has been demonstrated between the size of Supervisory board and CIRATIO and CAR respectively, which implies that the hypotheses H_{1c} and H_{1d} are rejected. The analysis also examines the impact of bank's age as a control variable on each of the dependent variables and proves that there is a significant and positive relationship only to the capital requirement as shown in Appendix 1D. That is, the Macedonian banks usually tend to increase the financial capital held for liquidity purposes over time. Importantly, the assessment of this model demonstrates no significance in the relation between bank's age and its profitability, which means that the commonly used rationale that the old banks perform better results does not necessarily apply in the case with Macedonia.

From the assessment of the variables in the second model, it's visible that there is a significant impact in negative direction of the board's independence measured by the proportion of non-executive members seated in the Supervisory board to bank's profitability measured by ROA and ROE (see Appendices 2A and 2B). Such conclusion strikes with numerous studies on this topic, including the agency theory, and leads the hypotheses H_{2a} and H_{2b} to be unsupported. However, the findings presented in Appendix 2C show that there is a positive association of the proportion of non-executive members to the Cost-Income Ratio, implying that an increase of this proportion in the Supervisory board of Macedonian banks is likely to boost bank's efficiency. This subsequently leads to acceptance of the hypothesis stated as H_{2c} . The results shown in Appendix 2D also suggest the existence of a positive dependence of Supervisory board independence on the Capital Adequacy Ratio, meaning that the bank will usually prefer risk aversion and therefore hold more liquidity assets as result of the increase of outsiders within the board. The hypothesis H_{2d} is thus supported. The assessment of the regression model also yields results that prove the existence of a significant and negative relationship between the proportion of female

members of the Supervisory board and bank's performance measured by ROA (see Appendix 2A), implying to the conclusion that the banks in Macedonia with a large proportion of women do not perform better results than the others. In addition, the findings in Appendix 2C reveal a statistically significant and strong positive association of the Women members Ratio to the Cost-Income Ratio, which suggests that the presence of female members in the Supervisory board may still be justified that they can bring competences to improve supervision that is likely to boost bank's efficiency. No significant relationship has been demonstrated in the relationship between the Foreign members of Supervisory Board Ratio and Supervisory Board Educational Ratio as independent variables and the dependent variables.

When measuring the impact of the CEO qualities on bank's performance, the results shown in Appendices 4A and 4B suggest a significance and positive association of the number of terms serving as CEO and bank's profitability measured by ROA and ROE. It means that the banks in Macedonia managed by CEOs that hold this position for a longer period of one four-year term are more profitable than those with CEOs serving their first term as such. The hypotheses H_{3a} and H_{3b} are thus unsupported. Further in this analysis, there is a significant and negative impact of the length of term on bank's efficiency measured by the Cost-Income Ratio and on the capital requirement measured by the Capital Adequacy Ratio as well. The first relationship proves the statement that the CEOs that serve their first term at this position are better in improving bank's efficiency than those serving longer, while the latter one the statement that the CEOs with less history in the bank are more adverse towards the risk and therefore would manage to hold larger portion of their potential for lending. In this case, the hypothesis H_{3c} is supported and hypothesis H_{3d} unsupported. It can be explained by the fact that the CEO needs time to learn all of the preferences and politics of the bank in order to improve his decision-making abilities towards bank's risk management. In addition to these findings, the assessment of this model also reveals a significant and negative relationship between the nationality of CEO and the profitability measured by ROE as shown in Appendix 3B. In other words, the banks with foreign CEO do not necessarily perform better results in the return of the capital invested by their owners. The analysis also demonstrates that the Credits/Deposits Ratio has a significant and negative impact on the Capital Adequacy Ratio (see Appendix 4), implying that a reduced Credits/Deposits Ratio is likely to trigger an increase in the portion of lending potential held by the bank. Logically, the reduced number of CDRATIO provoked by the reduced amount of money in form of credits to the customers results in increase of the liquidity assets and thereby CAR. For the impact of the ownership by the CEO and the status of a bank as a subsidiary or an independent financial institution, the probabilities in the analysis to each of the dependent variables show that there is no significance.

Despite of the findings and the methodology used in this study, the results and the comments can still be biased because of several limitations including: manipulation of financial statements, undervaluation of assets, use of manipulative policies to record depreciation, adoption of different methods to consolidate accounts and others (see Chakravathy, 1986).

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Appendices

Appendix 1A: Regression results for the relation of the Board size to Return on Assets (ROA)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | -0.146390 | 0.036525 | -4.007936 | 0.0002 |
| SBSIZE | 0.056854 | 0.021467 | 2.648497 | 0.0105 |
| MBSIZE | 0.032109 | 0.015318 | 2.096145 | 0.0406 |
| AGE | 0.001694 | 0.005875 | 0.288410 | 0.7741 |
| R-squared | 0.249026 | Mean dependent var | | -0.010042 |
| Adjusted R-squared | 0.208795 | S.D. dependent var | | 0.031896 |
| S.E. of regression | 0.028371 | Akaike info criterion | | -4.222540 |
| Sum squared resid | 0.045076 | Schwarz criterion | | -4.082917 |
| Log likelihood | 130.6762 | Hannan-Quinn criter. | | -4.167926 |
| F-statistic | 6.189950 | Durbin-Watson stat | | 0.988945 |
| Prob(F-statistic) | 0.001043 | | | |

Appendix 1B: Regression results for the relation of the Board size to Return on Equity (ROE)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | -0.376426 | 0.220806 | -1.704777 | 0.0938 |
| SBSIZE | 0.103667 | 0.129774 | 0.798829 | 0.4278 |
| MBSIZE | 0.088306 | 0.092604 | 0.953581 | 0.3444 |
| AGE | 0.032068 | 0.035518 | 0.902844 | 0.3705 |
| R-squared | 0.082943 | Mean dependent var | | -0.020418 |
| Adjusted R-squared | 0.033815 | S.D. dependent var | | 0.174490 |
| S.E. of regression | 0.171515 | Akaike info criterion | | -0.623957 |
| Sum squared resid | 1.647365 | Schwarz criterion | | -0.484334 |
| Log likelihood | 22.71871 | Hannan-Quinn criter. | | -0.569343 |
| F-statistic | 1.688309 | Durbin-Watson stat | | 1.315993 |
| Prob(F-statistic) | 0.179918 | | | |

Appendix 1C: Regression results for the relation of the Board size to Cost-Income Ratio (CIRATIO)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | 1.080652 | 0.294811 | 3.665575 | 0.0005 |
| SBSIZE | -0.216034 | 0.173268 | -1.246815 | 0.2177 |
| MBSIZE | 0.276174 | 0.123641 | 2.233672 | 0.0295 |
| AGE | -0.067618 | 0.047423 | -1.425867 | 0.1595 |
| R-squared | 0.101155 | Mean dependent var | | 0.792067 |
| Adjusted R-squared | 0.053002 | S.D. dependent var | | 0.235320 |
| S.E. of regression | 0.228999 | Akaike info criterion | | -0.045859 |
| Sum squared resid | 2.936666 | Schwarz criterion | | 0.093764 |
| Log likelihood | 5.375779 | Hannan-Quinn criter. | | 0.008755 |
| F-statistic | 2.100720 | Durbin-Watson stat | | 1.207271 |
| Prob(F-statistic) | 0.110422 | | | |

Appendix 1D: Regression results for the relation of the Board size to Capital Adequacy Ratio (CAR)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | 0.609368 | 0.121774 | 5.004074 | 0.0000 |
| SBSIZE | -0.138791 | 0.071570 | -1.939238 | 0.0575 |
| MBSIZE | -0.276880 | 0.051071 | -5.421463 | 0.0000 |
| AGE | 0.045025 | 0.019588 | 2.298539 | 0.0253 |
| R-squared | 0.407788 | Mean dependent var | | 0.212308 |
| Adjusted R-squared | 0.376062 | S.D. dependent var | | 0.119750 |
| S.E. of regression | 0.094590 | Akaike info criterion | | -1.814189 |
| Sum squared resid | 0.501047 | Schwarz criterion | | -1.674566 |
| Log likelihood | 58.42566 | Hannan-Quinn criter. | | -1.759575 |
| F-statistic | 12.85358 | Durbin-Watson stat | | 0.839743 |
| Prob(F-statistic) | 0.000002 | | | |

Appendix 2A: Regression results for the relation of the Board composition to Return on Assets (ROA)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | 0.034611 | 0.012728 | 2.719172 | 0.0087 |
| SBINDEPEND | -0.107632 | 0.031599 | -3.406124 | 0.0012 |
| FSBRATIO | 0.008632 | 0.017053 | 0.506195 | 0.6147 |
| WSBRATIO | -0.073939 | 0.026469 | -2.794500 | 0.0071 |
| EDUSBRATIO | -0.035476 | 0.025361 | -1.398876 | 0.1675 |
| R-squared | 0.365842 | Mean dependent var | | -0.010042 |
| Adjusted R-squared | 0.319722 | S.D. dependent var | | 0.031896 |
| S.E. of regression | 0.026307 | Akaike info criterion | | -4.358279 |
| Sum squared resid | 0.038064 | Schwarz criterion | | -4.183751 |
| Log likelihood | 135.7484 | Hannan-Quinn criter. | | -4.290012 |
| F-statistic | 7.932301 | Durbin-Watson stat | | 1.358123 |
| Prob(F-statistic) | 0.000040 | | | |

Appendix 2B: Regression results for the relation of the Board composition to Return on Equity (ROE)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | 0.129448 | 0.083492 | 1.550414 | 0.1268 |
| SBINDEPEND | -0.422532 | 0.207277 | -2.038495 | 0.0463 |
| FSBRATIO | -0.028457 | 0.111858 | -0.254400 | 0.8001 |
| WSBRATIO | -0.014992 | 0.173555 | -0.086383 | 0.9315 |
| EDUSBRATIO | -0.067783 | 0.166352 | -0.407465 | 0.6852 |
| R-squared | 0.088273 | Mean dependent var | | -0.020418 |
| Adjusted R-squared | 0.021966 | S.D. dependent var | | 0.174490 |
| S.E. of regression | 0.172563 | Akaike info criterion | | -0.596453 |
| Sum squared resid | 1.637790 | Schwarz criterion | | -0.421924 |
| Log likelihood | 22.89358 | Hannan-Quinn criter. | | -0.528185 |
| F-statistic | 1.331277 | Durbin-Watson stat | | 1.425126 |
| Prob(F-statistic) | 0.269933 | | | |

Appendix 2C: Regression results for the relation of the Board composition to Cost-Income Ratio (CIRATIO)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| C | 0.490905 | 0.278364 | 1.763535 | 0.0834 |
| SBINDEPEND | 1.720315 | 0.691062 | 2.489379 | 0.0159 |
| FSBRATIO | -0.199803 | 0.372937 | -0.535755 | 0.5943 |
| WSBRATIO | 1.241374 | 0.578634 | 2.145353 | 0.0364 |
| EDUSBRATIO | 0.507813 | 0.554619 | 0.915606 | 0.3639 |
| R-squared | 0.237478 | Mean dependent var | | 1.178985 |
| Adjusted R-squared | 0.182022 | S.D. dependent var | | 0.636127 |
| S.E. of regression | 0.575327 | Akaike info criterion | | 1.811899 |
| Sum squared resid | 18.20506 | Schwarz criterion | | 1.986427 |
| Log likelihood | -49.35696 | Hannan-Quinn criter. | | 1.880166 |
| F-statistic | 4.282264 | Durbin-Watson stat | | 1.793693 |
| Prob(F-statistic) | 0.004353 | | | |

Appendix 2D: Regression results for the relation of the Board composition to Cost Adequacy Ratio (CAR)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | 0.129339 | 0.056086 | 2.306064 | 0.0249 |
| SBINDEPEND | 0.351122 | 0.139239 | 2.521725 | 0.0146 |
| FSBRATIO | 0.001963 | 0.075141 | 0.026129 | 0.9792 |
| WSBRATIO | -0.103572 | 0.116586 | -0.888371 | 0.3782 |
| EDUSBRATIO | -0.047632 | 0.111748 | -0.426248 | 0.6716 |
| R-squared | 0.126469 | Mean dependent var | | 0.212308 |
| Adjusted R-squared | 0.062940 | S.D. dependent var | | 0.119750 |
| S.E. of regression | 0.115920 | Akaike info criterion | | -1.392177 |
| Sum squared resid | 0.739060 | Schwarz criterion | | -1.217648 |
| Log likelihood | 46.76531 | Hannan-Quinn criter. | | -1.323909 |
| F-statistic | 1.990720 | Durbin-Watson stat | | 0.655034 |
| Prob(F-statistic) | 0.108698 | | | |

Appendix 3A: Regression results for the relation of the CEO qualities to Return on Assets (ROA)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | -0.022575 | 0.016339 | -1.381659 | 0.1728 |
| CDRATIO | 0.003358 | 0.017645 | 0.190284 | 0.8498 |
| CEO | 0.005906 | 0.012555 | 0.470458 | 0.6399 |
| CEOOWN | 0.009195 | 0.011204 | 0.820655 | 0.4155 |
| CEOPOWER | 0.027622 | 0.011243 | 2.456899 | 0.0173 |
| BNATURE | -0.003174 | 0.009966 | -0.318509 | 0.7513 |
| R-squared | 0.211622 | Mean dependent var | | -0.010042 |
| Adjusted R-squared | 0.138624 | S.D. dependent var | | 0.031896 |
| S.E. of regression | 0.029603 | Akaike info criterion | | -4.107266 |
| Sum squared resid | 0.047321 | Schwarz criterion | | -3.897831 |
| Log likelihood | 129.2180 | Hannan-Quinn criter. | | -4.025344 |
| F-statistic | 2.899004 | Durbin-Watson stat | | 1.044184 |
| Prob(F-statistic) | 0.021698 | | | |

Appendix 3B: Regression results for the relation of the CEO qualities to Return on Equity (ROE)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | -0.050484 | 0.081246 | -0.621375 | 0.5370 |
| CDRATIO | -0.005299 | 0.087741 | -0.060391 | 0.9521 |
| CEO | -0.152681 | 0.062428 | -2.445708 | 0.0177 |
| CEOOWN | 0.018504 | 0.055712 | 0.332139 | 0.7411 |
| CEOPOWER | 0.150764 | 0.055905 | 2.696779 | 0.0093 |
| BNATURE | 0.030742 | 0.049555 | 0.620371 | 0.5376 |
| R-squared | 0.348639 | Mean dependent var | | -0.020418 |
| Adjusted R-squared | 0.288327 | S.D. dependent var | | 0.174490 |
| S.E. of regression | 0.147201 | Akaike info criterion | | -0.899395 |
| Sum squared resid | 1.170080 | Schwarz criterion | | -0.689961 |
| Log likelihood | 32.98185 | Hannan-Quinn criter. | | -0.817474 |
| F-statistic | 5.780660 | Durbin-Watson stat | | 1.611462 |
| Prob(F-statistic) | 0.000241 | | | |

Appendix 3C: Regression results for the relation of the CEO qualities to Cost-Income Ratio (CIRATIO)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| C | 1.516647 | 0.335307 | 4.523156 | 0.0000 |
| CDRATIO | -0.236314 | 0.362114 | -0.652594 | 0.5168 |
| CEO | -0.102785 | 0.257645 | -0.398940 | 0.6915 |
| CEOOWN | -0.092073 | 0.229926 | -0.400447 | 0.6904 |
| CEOPOWER | -0.532734 | 0.230724 | -2.308967 | 0.0248 |
| BNATURE | 0.079570 | 0.204516 | 0.389066 | 0.6988 |
| R-squared | 0.165249 | Mean dependent var | | 1.178985 |
| Adjusted R-squared | 0.087957 | S.D. dependent var | | 0.636127 |
| S.E. of regression | 0.607507 | Akaike info criterion | | 1.935734 |
| Sum squared resid | 19.92951 | Schwarz criterion | | 2.145169 |
| Log likelihood | -52.07203 | Hannan-Quinn criter. | | 2.017656 |
| F-statistic | 2.137985 | Durbin-Watson stat | | 1.507900 |
| Prob(F-statistic) | 0.074739 | | | |

Appendix 3D: Regression results for the relation of the CEO qualities to Cost Adequacy Ratio (CAR)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | 0.431176 | 0.052103 | 8.275445 | 0.0000 |
| CDRATIO | -0.262123 | 0.056269 | -4.658420 | 0.0000 |
| CEO | 0.007739 | 0.040035 | 0.193304 | 0.8474 |
| CEOOWN | 0.002504 | 0.035728 | 0.070074 | 0.9444 |
| CEOPOWER | -0.106066 | 0.035852 | -2.958455 | 0.0046 |
| BNATURE | 0.028610 | 0.031780 | 0.900266 | 0.3720 |
| R-squared | 0.431230 | Mean dependent var | | 0.212308 |
| Adjusted R-squared | 0.378566 | S.D. dependent var | | 0.119750 |
| S.E. of regression | 0.094400 | Akaike info criterion | | -1.787911 |
| Sum squared resid | 0.481214 | Schwarz criterion | | -1.578476 |
| Log likelihood | 59.63732 | Hannan-Quinn criter. | | -1.705989 |
| F-statistic | 8.188349 | Durbin-Watson stat | | 0.978358 |
| Prob(F-statistic) | 0.000008 | | | |