

Working papers

New trends in accounting and management



Universitat de Lleida
Department of Business
Administration

How does board characteristics and insider ownership affect non-performing loans (NPLS) in European banking?

Ellis Kofi Akwaa-Sekyi
University of Lleida, Spain
Catholic University College of Ghana,
Sunyani, Ghana

Jordi Moreno
University of Lleida, Spain

Federica Miglietta
University of Bari (Aldo Moro), Italy

Valeria Roncone
University of Bari (Aldo Moro), Italy

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c/ Jaume II, 73 (25001 Lleida)

Tf. 973 70 32 06 / Fax: 973 70 33 43

e-mail: secretaria@aegern.udl.cat

HOW DOES BOARD CHARACTERISTICS AND INSIDER OWNERSHIP AFFECT NON-PERFORMING LOANS (NPLS) IN EUROPEAN BANKING?

ABSTRACT

Manuscript type

Empirical

Research question/issue

The state of non-performing loans (NPLs) poses serious threat to the European financial market and this has increased pressure on board of directors to intensify their monitoring functions to safeguard shareholder assets. Yet there is a dearth of research that complement board characteristics with managerial incentives to address NPLs. We examine 102 banks from 22 European countries to ascertain how board characteristics and insider ownership affect NPLs.

Research findings/insight

We find that whilst gender diversity, board size and insider ownership have negative relation with NPLs, average board age and board tenure show positive relation. The inclusion of insider ownership improves the significance of board characteristics therefore confirming a complementary instead of substitutable approaches in addressing NPLs. We report significant differences in the intrinsic board characteristics of diversified and non-diversified banks.

Theoretical/academic implications

We contribute to existing literature by providing empirical support for the stakeholder and agency theories in safeguarding assets of shareholders and indirect stakeholders (society).

Practitioner/policy implications

Our study adopts an incentivizing approach to risk management and provides a framework for dealing with moral hazards in bank management, which lead to loan losses. Again, our

findings justify the European Banking Authority's policy of the mandatory 40% female independent directors among member countries.

Key words

Board Characteristics, Corporate Governance, European Banking, Insider Ownership, Non-Performing Loans

1. INTRODUCTION

The focus of this study is to answer the question of how board characteristics and insider ownership affect non-performing loans (NPLs forthwith) in European banking. The global financial crisis negatively affected public confidence in the financial services industry (especially banks). It is believed that poor governance among other factors were latent or significant causes of the 2007 crisis (Gualandri, Stanziale, & Mangone, 2011; Gualandri, 2011; Andres & Vallelado, 2008; Kirkpatrick, 2009; Laeven, 2013). In the opinion of these authors, the exercise of powers over banks has fallen below expectation and has exacerbated bank risk exposure. The only way to restore trust and confidence in a financial system is through corporate governance (Farber, 2005) which uses board of directors as a major operational channel. Bank risk consciousness has increased in recent times which has deepened the pressure on board of directors in their monitoring and control functions on key bank activities (Bebchuk, Cohen, & Spamann, 2010; Muller-Kahle & Lewellyn, 2011; Srivastav & Hagedorff, 2016). The situation is very much mentioned in Europe as can be seen from the European Central Bank's assiduous efforts to address risk issues through various directives and structures within the financial system. A study of this nature in Europe is eminent because European banks are reported to contribute more to global systemic risk due to poor loan portfolios and their interconnectedness to the rest of the global financial system (Bostandzic & Weiß, 2013).

Globalization has made financial markets more liquid and large (Europe not exception) with complex market participants, risks and governance mechanisms. Banks exist to provide financial intermediation functions, which help to smoothen consumption through the supply of credit (Casu, Girdorne, & Molyneax, 2015). One key function of bank management which, is also a major source of shareholder income, is the generation of assets through loans. The state of NPLs has been reported as posing a threat to major financial markets like Europe (Barisitz, 2013; Erdinç & Abazi, 2014; KPMG, 2017), China (D. Zhang, Cai, Dickinson, & Kutan, 2016) and the US (Ghosh, 2015). Such loan losses impair shareholder value thereby increasing agency costs (Kanagaretnam, Lobo, & Mathieu, 2003). The agency problem existing between shareholders and managers are addressed through corporate governance strategies such as hostile takeovers where the agent lose their jobs, internal mechanisms through stock ownership options or through close monitoring by independent board members (Kaymak & Bektas, 2008). This study takes a holistic approach by combining the interest-aligning and close monitoring mechanisms of addressing this long-standing conflict which has been a threat to the global financial environment. The board of directors owe it a duty to minimize information asymmetry and possible losses for ordinary shareholders whose interest they first represent (Bhagat & Bolton, 2007; Fama & Jensen, 1983) and also other stakeholders (Zagorchev & Gao, 2015); but in the case of alarming trends in NPLs (such as reported in Europe), there seem to be a perception of ineffective monitoring on the part of the

board. Some factors which contribute to high non-performing loans stem from ineffective functioning of the board of directors and poor managerial incentives (Faleye & Krishnan, 2017; Mamatzakis, Zhang, & Wang, 2017). This paper takes up the challenge by investigating how board characteristics and insider ownership affect NPLs in European banking.

There are international issues regarding board governance which mirror national institutional settings and capital market development (Aguilera, 2005). These trans-national influences are major input in developing various governance frameworks such as board composition, structures and functions. Among international issues that affect board structure and functions are rule of law, investor protection and financial market laws which act as complements or substitutes to board governance especially as wealth protectors or creators (Kim & Ozdemir, 2014). European corporate governance system has board structures which are unitary, two-tier (management and supervisory boards) or both (Farag & Mallin, 2017; Hopt & Leyens, 2004). For instance, in Germany, France and Netherlands, it is a requirement for listed firms to operate two-tier boards.

The characteristics of boards determine the expected performance and their effectiveness (Pablo de Andres, Azofra, & Lopez, 2005; Desender, Aguilera, Crespi, & García-cestona, 2013; Zona & Zattoni, 2007) and how a board is composed determines its function and effectiveness (Sur, Lvina, & Magnan, 2013). Zona and Zattoni (2007) studied Italian firms and reported that board demographic variables determine three performance dimensions namely service, monitoring and networking. It was reported that board characteristics impacted on board decision processes with negative effects for risk management decisions (Lewellyn & Muller-Kahle, 2012; Muller-Kahle & Lewellyn, 2011) but the focus of this paper is NPLs which is a by-product of loan generation. In the work of Desender et al. (2013), it was established that firm ownership influences the monitoring function of boards. However, the proxy variables for board of directors were board independence and CEO duality and this is one area where we differ by providing an extended and comprehensive view of board of directors by looking at the intrinsic and extrinsic characteristics. Desender et al. (2013) used concentrated and dispersed ownership whilst we use insider ownership as complementary to board characteristics. Existing studies have not thoroughly and conclusively established how the characteristics of board of directors affect the outcome of loans (a key function of banks) in European banking. This gap needs to be addressed, thus the focus of this study.

Opportunistic management behaviour (agency problem) is minimized through insider or managerial ownership (Coles, Daniel, & Naveen, 2006; Lafond & Roychowdhury, 2008). These moral hazards are exhibited by managers in credit creation, loan loss provision and non-performing loans reporting (Moro & Fink, 2013; D. Zhang et al., 2016) and also found to be a determinant of non-performing loans (Louzis et al., 2012). We conjecture that insider ownership will complement effective board monitoring to check some reckless behaviour of

the agent which leads to the loss of assets through non-performing loans. However, there is little to show in a single study that delves into the relationship between board characteristics and insider ownership on bank non-performing loans (credit risk) from a cross-country perspective in Europe. In fulfilling their corporate governance responsibilities, board of directors play key roles in strategic decision making, monitoring executives/management and ensuring full disclosure and reporting (Petrovic, 2008). This paper emphasises the board monitoring function aspect of corporate governance and interest-alignment mechanism of the agent and the principal to address a market failure in European banking. We posit that **insider ownership improves board risk monitoring function than otherwise. The study therefore tests two models where insider ownership is included and another where it is dropped.** Bank insider ownership and intrinsic and extrinsic characteristics of board of directors should maximize shareholder value by reducing loan losses.

The study draws motivation from the works of Hagendorff, Collins, and Keasey (2010) and Sur, Lvina, and Magnan (2013) who propose complementary approaches to research on board characteristics. Hagendorff et al. (2010) propose combining board monitoring with external regulations but our study adopts board monitoring (through board characteristics) with managerial incentives. Sur et al. (2013) concluded that board composition and ownership structure should be issues of complementary rather substitutable governance mechanisms. Creating value for firm implies an optimal mix of board effectiveness and minimization of the agency problem. We ascribe to the complementary model approach but differ on the choice of variables. Closely related to this motivation is on methodological grounds where the authors concluded that board characteristics is effective if it is moderated by the presence of non-convergence of shareholder and manager interests (Stockmans, Lybaert, & Voordeckers, 2013). We share in the position of the authors and therefore propose a model that confirms the relevance of controlling managerial opportunism. However, their research focussed on CEO non-duality, proportion of outside directors and the relationship with earnings management.

In another study which motivates this paper, the authors reported that material internal control weakness which stem from ineffective board monitoring and other corporate governance deficiencies give rise to escalating loan losses and loan loss provisions (Cho & Chung, 2016). When board monitoring functions are intensified and made effective, internal control weaknesses, agency problems and possible loan losses will be minimized. We propose board characteristics and insider ownership to address board monitoring and agency problems respectively and how they can jointly minimize non-performing loans. Another strong motivation for the study emanates from the European Central Bank's (ECB) declaration of NPLs as a major problem to the union (KPMG, 2017). The KPMG report indicates that as at 2016, European banks had about €1 trillion worth of NPLs. Non-Performing Loans do not only constitute loss of assets and drain in profitability but also inhibits the continuous flow of the credit cycle and the financial intermediation function. As part of pragmatic measures

to resolve the worrying NPLs, the ECB directed that the losses should be absorbed by shareholders and other investors to avoid moral hazards (KPMG, 2017). Thus, a call on board of directors to intensify their monitoring and control functions to protect the assets of investors (shareholders, creditors and society) becomes inevitable. It is against this background that a study of the characteristics board of directors combined with managerial incentives to reduce the agency problem and NPLs has been undertaken.

This research aligns with previous studies (Faleye & Krishnan, 2017; Hagendorff et al., 2010; Srivastav & Hagendorff, 2016) but deviates on certain lines. Hagendorff et al (2010) studied board monitoring (three variables) and regulation and performance of the banking industry whilst the current study extend board monitoring measures (to cover other characteristics) complemented with managerial incentives to address the complex and multifaceted nature of credit risk (NPLs). The work by Faleye and Krishnan (2017) focused on corporate lending but this study uses data that cover both individual and corporate lending since these sectors offer holistic financial intermediation to economic units. In the case of Srivastav and Hagendorff (2016) a comprehensive review of board effectiveness was done. The current study provides empirical evidence to support the good work done by Srivastav and Hagendorff.

We use panel data on intrinsic and extrinsic board characteristics from Orbis, S&P Global (formerly SNL Financials) databases and bank annual reports from company websites. Research on board characteristics has been widely published but none uses the classification into intrinsic and extrinsic board characteristics. We introduce this novelty classification because of its linkage with our research design. Apart from addressing the issue of the relationship between board characteristics and insider ownership on NPLs, we investigate whether the inclusion of insider ownership improves the negative relationship between board characteristics and NPLs or not. We find that, some board characteristics significantly reduce bank non-performing loans. We also report that the inclusion of insider ownership to the model reduces the standard errors and improves the predictive powers of board characteristics and control variables.

The study makes significant contribution to literature. Theoretically, we confirm that the use of managerial incentives (insider ownership) maximizes the value enhancing function of banks. This supports the agency theory. Again, the resource dependency theory is made more meaningful in the role of board of directors in their fiduciary role as monitors. From the stakeholder theory perspective, effective board monitoring protects the interest of not only shareholders but other indirect interest groups (society at large). Practically, the study affirms that it is not enough to leave the asset-safeguarding function alone to board of directors but complementing it with managerial incentives reduces NPLs better. Thus, a major concern for the European Central Bank is addressed in this study. Another contribution this study makes is that intrinsic board characteristics such as gender diversity and average age of board

members are very crucial in reducing bank credit risk. This is very informative for recruiting members to serve on the board of banks and other financial institutions. To the best of our knowledge, the classification of board of directors into intrinsic and extrinsic characteristics is the first in corporate governance research. This classification has implication for selecting who to recruit to serve on boards and for what purpose. The research affirms the agency and resource dependency theories in reducing the agency problem, creating value for the firm and justifying the recruitment of people to serve as board members. The remainder of the paper is made up of the literature and hypotheses development, methodology and data. The presentation of results, analysis, discussions and conclusions follow.

2. LITERATURE AND HYPOTHESES DEVELOPMENT

The European banking industry is situated within a mix of strong resilient as well as emerging economies. Thus, the contribution of the legal, economic and socio-cultural systems to the banking industry varies across countries even though the European Union is doing well with its standardization policies. In recent times, the European banking environment has been plagued with economic stagnation, weaker banking sector and governance systems as well as high rates of bank asset quality, specifically non-performing loans (Barisitz, 2013).

Non-Performing Loans

There is no universally acceptable definition for non-performing loans probably due to variations in cross-national regulatory frameworks and banking practices. For this paper, operational definitions from international institutions and organizations who matter in the financial services industry (especially banking) will be considered. The International Monetary Fund (IMF) describes a loan as non-performing when servicing (payment of interest and principal) is past due by 90 days or more or interest payments for 90 days or more are capitalized, refinanced or delayed by agreement (Bloem & Freeman, 2005). Once a loan is classified as such, it must remain non-performing until written-off, interest and principal paid on it or subsequent loans that replaced the original. The Basel Committee on Banking Supervision (2016) defines NPL to cover non-performing exposures which are defaulted under the Basel framework, credit impaired, more than 90 days past due and where there is evidence to suggest doubts about ability to make full payment in accordance with contractual terms. The Basel definition sees NPL as a regulatory term used for credit risk monitoring and management perspectives rather than an accounting concept (Basel Committee on Banking Supervision, 2016). The European Central Bank provides a wider definition just as that of

Basel, which uses the term ‘non-performing exposure’ to cover default and impairment thus addressing accounting and regulatory issues that may arise.

Non-performing exposure constitutes material exposures which are more than 90 days past due and or the debtor upon assessment is unlikely to pay its credit obligations in full without realization of collateral, irrespective of the existence of any past due amount or the number of days past due (European Central Bank, 2016). The definition is grounded on the principles of ‘past due’ and ‘ability to pay’. Even though differences exist in the definitions, there are fundamental similarities that do not change the content of the concept.

Non-performing loans is a by-product of the financial intermediation function (credit supply) and used to measure the credit worthiness of the banking system. As an ex-post event, its consequences initiate banking crisis which can further trigger financial crisis (Reinhart & Rogoff, 2011). It is almost a global threat to financial intermediation with evidence provided among other places like Europe, the US and China. The severity of NPLs is varied with countries and with time and this might explain why systemic factors and other macroeconomic factors may account for differentials in their levels and impact in various countries (Beck, Jakubik, & Piloïu, 2013). Within Europe, there is huge debt overhang emanating from soaring NPLs that is stifling economic growth especially in the post-crisis period as found in the work of Erdinç and Abazi (2014) which further reported that GDP and inflation are macroeconomic determinants of NPLs whilst management quality is instrumental to loan defaults.

Addressing NPLs has come with several approaches including micro and macro-prudential measures. In a draft guideline to banks on NPLs, the European Central bank proposes among other measures, a control framework. As a second line defence control, the monitoring and quantification of NPL-related risk, reviewing the performance of the overall NPL operating model, quality assurance through loan processing, monitoring and aligning these processes with internal policies (European Central Bank, 2016) fall within the purview of the board and senior management.

From the definitions of NPL, it is difficult to disassociate the involvement of management and board of directors in the initiation and contracting of loans, funding, servicing, monitoring, treatment and reporting in the balance sheet of banks. This is why we see the need for the joint roles of the board of directors and managers in addressing this market failure that is reported among the key risks facing European banking (Beck et al., 2013; European Central Bank, 2016). This is not to undermine regulatory and quantitative approaches to deal with NPLs but to offer another line which also adds up to the confidence of market participants. Suggestions from experts about maximizing the value, recovery and returns on NPL sales through the establishment of Asset Management Companies are worthwhile (Fell, Grodzicki, Martin, & O’Brien, 2016), they may however have some challenges. Maximizing returns and value on

NPL sale might exacerbate the incentive for managers to increase the stock in the balance sheet. Relying on the monitoring acumen of board of directors, emphasizing their fiduciary role and responsibility to all stakeholders and aligning the interest of managers and owners will revive the waning confidence in the financial markets. The human elements at play in the upsurge of NPLs are undeniable as can be seen from the theoretical explanations provided by the agency theory, resource dependency and stakeholder theories. There is empirical evidence on NPLs from major economies and financial markets world-wide.

In the US, State and regional level studies show that greater capitalization, liquidity risks, poor credit quality, cost inefficiency and banking sector size significantly increase NPLs whilst bank profitability lower NPLs (Ghosh, 2015). The focus of the research by Ghosh was on banking industry and regional economic determinants for commercial and savings institutions. The relationship between corporate governance and NPLs was reported in the US (Tarchouna, Jarraya, & Bouri, 2017). The authors, using dynamic panel data reveal that small banks have sound corporate governance practices which reduce NPLs but same cannot be said of medium and large banks in their risk-taking behaviour. Their study used an index for corporate governance which included board characteristics for commercial banks in the US.

In China, NPLs has been the nucleus around which most banking regulations have been developed and since 2003, it has come under scrutiny with lots of capital being injected into the banking system to absorb the devastating effects of NPLs (D. Zhang et al., 2016). Zhang et al. (2016) reported that increases in NPLs has increased moral hazards, riskier lending and financial sector instability. It seems to suggest that, there are behavioural issues in the whole subject of NPLs. Switzer, Tu, and Wang (2018) studied 28 countries outside North America and confirmed that reduced default risk help revamp the stock market after the financial crisis whilst internal governance variables, insider ownership, board composition and CEO power and external regulatory factors significantly reduce default risk. Switzer et al. (2018) reported that the impact of governance variables on default was higher for Asian countries than for European countries. In this current study, we use a broader view of default (NPLs which include default) and concentrate on European countries to reveal what pertains to Europe. We proceed with the theoretical framework of the study.

Board characteristics and theories

There is abundance of research on board characteristics but most of such studies are either about non-financial institutions or the outcome variable is firm performance (Adams & Mehran, 2012; Badru, Ahmad-Zaluki, & Wan-Hussin, 2017; Jermias & Gani, 2014; Kaymak & Bektas, 2008; Sarkar & Sarkar, 2018). A dearth of literature exists on board characteristics and non-performing loans. The relationship between board demographics and performance

remains inconclusive and the current study classify board characteristics into two; namely intrinsic and extrinsic characteristics.

Intrinsic and extrinsic board characteristics

This research uses a distinctive model which to the best of our knowledge is the first to be used in studies involving the relationship between board characteristics and credit risk at the cross-country level. Intrinsic and extrinsic categorization is very popular in the physical sciences. We view that board of directors have a latent structure with intrinsic and extrinsic attributes. In the opinion of Lewis (1983) a substance has intrinsic properties when ‘something is entirely about that thing’. The intrinsic properties emanate because of the way the individuals are (Francescotti, 1999; 2014). The intrinsic properties are such that an object cannot exist without them (Graversen & Osterbye, 2002).

Francescotti explains extrinsic properties as when something is not entirely about that thing though some other part of it might be inclusive in the larger whole. Such properties are needed for a certain situation and not permanent in nature (Graversen & Osterbye, 2002). The extrinsic properties of an object is as a result of the way the whole is instead of the thing itself (Marshal & Weatherson, 2018). Thus, the extrinsic characteristics are predefined until the inclusion of the individuals that constitute the group.

The philosophical relevance of this classification explains that the qualities board members carry before their appointment are intrinsic whereas those they possess as a result of joining the others (group) are extrinsic (Marshal & Weatherson, 2018). The characteristics of the board of directors such as size, independence, tenure, staggered board are predefined in nature. With this classification, group identity of the board is more pronounced than individualism as was emphasized by McNulty, Florackis, and Ormrod (2013). The authors support existing theories in their findings that boards’ work through group processes significantly affect financial risk. On the other hand, board characteristics such as gender and age are attributes within the individual members and can hardly change irrespective of where they are. It is specious to take a one-sided collective view of the board members but also considering their individual responsibilities (Miller-Stevens & Ward, 2014). A more balanced and holistic assessment of board of directors is the two-sided view which combines their intrinsic and extrinsic properties to function. Boards have oversight responsibility on corporate risk taking activities including investments (Harjoto, Laksmana, & Yang, 2018) such as loans. Harjoto et al admit that investment oversight is a complex task that require maximizing the diversity economies from board characteristics. They categorize board characteristics into relation-oriented (age, gender, race) and task-oriented (tenure, expertise) dimensions in monitoring performance.

By the classification of Harjoto et al. (2018), the relation-oriented characteristics are what we refer to as intrinsic whilst the task-oriented ones are extrinsic.

A lot of researchers have used the agency theory and few others, the stewardship theory to provide theoretical support for topics related to board of directors and corporate governance. Same can be said about studies on board characteristics. After studying board demographic variables and firm performance, it was concluded that each of the three theories (agency, stewardship and resource dependency) explained particular aspect of board performance and therefore suggested process-oriented approach (Nicholson & Kiel, 2007). We ascribe to this notion that no single theory comprehensively explains board functions and therefore employ two different but related theories in explaining board characteristics and the expectations on their monitoring and control functions to safeguard shareholder assets. The limitation of the agency theory in explaining the relationship between board characteristics and performance was reported by García-Ramos and García-Olalla (2011). We believe that, the characteristics of board of directors cast a first impression about its capacity to deliver in minimizing the agency problem which give reasonable assurance to shareholders and potential investors. Relating this to the rationale behind recruiting certain individuals to serve on boards, the resource dependency theory fits our research. The resource dependency theory finds explanation to our classification of board characteristics. In theory, board of directors bring into the firm their intrinsic characteristics as resources the firms can rely on. The intrinsic board characteristics are innate human capital which serve as useful resources board members bring on board. In a broader sense, the human capital theory serve as precursor to the resource-based theory (Dalton & Dalton, 2011). Firms leverage on the human capital (resource) expertise of board members by engaging in stronger management diversity for effective monitoring (Mullins, 2018). Shareholders repose so much confidence in board members based on their expertise, experience and other attractive individual attributes that suggest their capabilities.

The other theory that offer explanation to the study is the stakeholder theory. Board of directors have a duty to safeguard the assets of shareholders and minimize the utility maximizing tendencies of the agent through effective monitoring (Fama & Jensen, 1983; Shleifer & Vishny, 1997). When the objective function of board of directors is achieved, value maximization should not be narrowly viewed as beneficial only to shareholders but other claimants such as debt holders, preference shares, warrants and indirect interest groups; which was described as enhanced or long-term value maximization (Jensen, 2001). Board functions should not over-emphasize the interest of ordinary shareholders to the neglect of other stakeholders whose interest (direct or indirect) equally need to be protected (Aguilera, 2005; Williams & Conley, 2005). Aguilera emphasizes that the governance and allocation of power in Anglo-Saxon and Continental Europe has shifted towards seeking the interest of the larger stakeholder rather than only shareholders. There is a net indirect societal benefit

(social welfare) when market failures such as loss of investment resources through non-performing loans are addressed. Therefore, the stakeholder theory rather than the agency theory provides an appropriate explanation to board characteristics. Financial institutions have unique characteristics which include opacity and better informational economies; they are heavily regulated and managers have fiduciary responsibility to both shareholders and non-shareholders (Zagorchev & Gao, 2015). The unique feature about financial institutions (especially banks) make them accountable to stakeholders with indirect interest because their activities affect the entire economy; making the stakeholder theory more relevant.

In their study of financial institutions worldwide during the period of the 2007-2008 financial crisis, Erkens, Hung, and Matos (2012) were dissatisfied with the one-sided protection of debt-holder rights to the neglect of long term shareholder rights. Their research makes a strong case for protecting and maximizing the interest of all stakeholders. Using non-financial firms in the US, Arena, Bozzolan, and Michelon (2015) report that stakeholder orientation of board of directors' monitoring function plays a transparency role in reporting the firm's excellent performance. In an era where investor confidence is waning in the financial services industry due to weak corporate governance systems and board ineffectiveness, the best way to regain the confidence of economic units is by seeking to satisfy all stakeholders whose interest seem to be marginalized. In the relationship between moral hazards and non-performing loans, two types of moral hazards can be identified: management investment in 'pet project' resulting in poor monitoring of loans and the conflict of interest between shareholders and creditors (D. Zhang et al., 2016). Shareholders may be interested in risky loans and shift the risk to depositors. Such conflicts may be possible where the board is only seeking the interest of shareholders but not under stakeholder theories. Stakeholder theories minimize risk shifting incentives of managers and shareholders.

Board characteristics is an aspect of corporate governance that create or destroy firm value by their effectiveness in controlling management (Kang, Cheng, & Gray, 2007). The individual and group characteristics of boards stimulate confidence in investors and add value to the firms they serve. Shareholders monitor the agent (management) through direct supervision, reliance on external auditors and board control functions (Hagendorff et al., 2010; Kaymak & Bektas, 2008; Zona & Zattoni, 2007). Board characteristics like size, structure and board independence improve the monitoring, advising and value creation functions of board of directors (Pablo de Andres & Vallelado, 2008).

From the US context, board configuration such as busyness of board, more gender diverse towards females and long tenure could have prevented or minimized the devastations of subprime lending (Muller-Kahle & Lewellyn, 2011). Bank holding companies (BHCs) with high risk management index (RMI) have board characteristics like size, independence, experience, executive compensations and lower NPLs (Ellul & Yerramilli, 2013). Board

characteristics have positive impact on bank asset quality in China (Liang, Xu, & Jiraporn, 2013). However, Liang et al. (2013) seem to portray a narrower view of board characteristics. It is reported that board characteristics are effective in the monitoring function of firm risk management frameworks (Ahmad et al., 2015). Falaye and Krishnan (2017) assert that banks with more effective boards are less likely to lend to risky borrowers during periods of industry distress. The authors measure effective boards as an index of board characteristics such as small size, independence, non-CEO duality, non-staggered board and presence of board level risk committee which provide some guarantee of effective loan monitoring and supervision.

Tarchouna, Jarraya, and Bouri (2017) used an index of corporate governance variables in a dynamic GMM model and found that sound corporate governance system of small banks reduced non-performing loans in the US but failed to protect medium and large US commercial banks from excessive risk-taking behaviours that impaired loan quality. We have some scepticisms about the use of an index in measuring broad concepts such as corporate governance. Creating indices always lump many variables as one and may suppress potentially significant stand-alone variables thereby producing misleading results. The various findings lay emphasis on the relevance of board characteristics in the governance of banks. The differences in the relations reported create a research gap, which this current work intends to fill. Our study contributes to the corporate governance literature by introducing a categorization of board characteristics into intrinsic and extrinsic attributes. We hypothesize from the deliberations that:

H_{1a}: Intrinsic board characteristics is negatively associated with bank NPLs

H_{1b}: Extrinsic board characteristics reduce bank NPLs

Insider (Managerial) ownership

Insider or managerial ownership is the owning of stocks or shares of executives or management of the company they serve. Management may engage in moral hazards such as the pursuit of personal interest or engaging in sub-optimal investments and other forms of weak protection of assets. Insider ownership (also known as managerial ownership) is one of the compensation schemes used to align the mismatching interests of principal (shareholders) and agent (management) in the firm (Darabos, 2014; Fama & Jensen, 1983; Hagendorff et al., 2010). Loans have been the greatest single largest contributor to assets in most bank balance sheets (Beck & Demircuc-Kunt, 2009). Gulamhussen, Pinheiro, and Sousa (2012) reported a non-linear 'U' shaped relation between managerial ownership and bank risks among 123 banks in the STOXX Global Index. The researchers confirm the agency theory in explaining the relation between managerial ownership and risks. In engaging in such crucial

asset-generating activity like loan creation, some negative behaviours might be exhibited by managers leading to high non-performing loans in the books of the bank (Andreou, Cooper, Louca, & Philip, 2017; Elyasiani & Zhang, 2017; Moro & Fink, 2013; D. Zhang et al., 2016). The authors mention moral hazards such as accounting treatment of loan losses, managerial trust, exploitation of moral supervisory banking environment, and entrenchment on the part of top management. Tanaka (2016) posits that firms with high managerial ownership show signs of high performance, have risk taking incentives and enjoy higher yield spreads. The author finds consistency with the risk-shifting and entrenchment hypotheses. Darabos (2014) maintains that managerial ownership is an effective way of aligning the mismatching interests of the owner and manager but cautions that in the long run, it may lead to over-entrenchment of managerial powers to consolidate their position.

The agency theory provides explanations to the use of insider/managerial ownership to control the agency problem. Making managers equity owners reduces the conflict of interest between the agent and principal (Jensen & Meckling, 1976) which is also value enhancing to the firm (Gulamhussen et al., 2012). Earlier studies report that firms with higher insider ownership tend to invest in assets with lower systemic risks and less reliance on debt as component of capital structure (Capozza & Seguin, 2003). In the work of Keys, Mukherjee, Seru, and Vig (2009), there was no significant relation between managerial incentives and the performance of loans in the US. This is probably because unlike our current study which uses the share option incentive (insider/managerial ownership) there could be other managerial monetary incentives which the researchers might have used. Managers tend to behave in a more prudent manner in safeguarding the assets of owners thereby minimizing the agency cost and enhancing value when they own some shares of the company. Contrary to this popular notion that managerial incentives (financial or equity options) reduce risk taking behaviour of managers, Bebchuk et al. (2010) use the case of Bear Stearns and Lehman in their paper ‘The Wages of Failure’ to challenge the assertion. They found that even though executives of these companies were enjoying heavy compensations, it was not enough to prevent the moral hazards they engaged in. Bebchuk et al (2010) do not write-off the use of incentives but recommend incentives with conditions that will reduce moral hazards on the part of executives. Some of these findings contribute to the inconclusiveness on the managerial incentive-risk relationship especially the case of insider ownership and non-performing loans (credit risk).

The effectiveness of insider owners in minimizing the agency costs and controlling firm resources is positively related to the extent of ownership they have as reported by Lugo (2016). The author reports an inverse U-shape relationship between insider ownership and cost of debt. From the deliberations above, we hypothesize that;

H₂: Insider ownership is inversely related to bank NPLs

H₃: Insider ownership improves the monitoring function of board of directors in reducing bank NPLs

Description of variables

The next section covers the description of variables used in the model.

Dependent variable

Non-Performing Loans

Reducing Non-performing loans has been the focus of many banking sector reforms and regulatory bodies. We measure non-performing loans by total impaired loans as ratio of total loans. Previously and popularly used is the ratio of non-performing loans to total loans which is described as default (Ghosh, 2015).

Independent variables

The independent variables are board characteristics and insider ownership. The board characteristics are intrinsic or extrinsic in nature and cover attributes like diversity, composition and structure.

Board size

The relationship between board size (measured by the number of board members) and dependent variables such as performance, risk taking and firm value, has been variously reported. In most banking research, the dependent variables have been performance (ROA, Tobin's Q). It is found that firms with large board size show signs of lower performance volatility and lower bankruptcy risk among Japanese firms but not in the US (Nakano & Nguyen, 2012). Captured among board structure variables, board size was reported to decrease bank performance (Pathan & Faff, 2013). The estimation technique was a two-step system generalized method of moments (GMM) for US banks. A panel data study of Chinese banks found significant effect of board size on performance but not on asset quality (Liang et al., 2013). In the US, it is reported that corporate governance structures of banks with larger boards are associated with lower credit risk (Switzer & Wang, 2013). This is yet to be confirmed in a cross-country study within Europe. In the case of Romanian banks, it was reported that board size negatively affect

business failure risk in a study using principal component analysis and multivariate regression analysis (Armeanu et al., 2017). These inconclusive reports and gaps about board size gives relevance to our study. We conjecture that board size will reduce non-performing loans.

Board independence

Research on the Organization for Economic Cooperation and Development (OECD) countries found that, a not-too-large independent board members might be efficient in creating value through the monitoring and advisory functions of the board (Pablo; de Andres & Vallelado, 2008). Board independence is linked to board effectiveness which end up maximizing firm value (Wagner, 2011). The relationship between board independence on key variables such as performance, value and risks is various. Using a 34-year bank-firm data, Adams and Mehran (2012) reported no relationship between board independence and bank performance. They measured performance by Tobin's Q, which some authors use as proxy for firm value. This is yet to be tested on NPLs in European banking. Liang et al. (2013) reported a significant negative relation between board independence and stock of non-performing loans but not on the ratio of NPLs and total loans. More independent board members have less significant relation with credit risk levels among US commercial banks (Switzer & Wang, 2013). In Indonesia and Bangladesh, board independence is said to positively affect bank performance (Kutubi, 2011; Tulung & Ramdani, 2018). Most of these studies either use performance or value as an outcome variable or conducted outside Europe. It is not yet known what pertains to European banking. We measure board independence by the ratio of outside members to total board members and expect a negative relation with NPLs.

Staggered board

Staggered or classified board is a board structure system used to weaken shareholder voice by ensuring the existence one-third of board members are re-elected (Aguilera, 2005). Maintaining a certain quota of boards enables continuity of mission and strategy but may also stifle change and innovativeness responsive to the dynamic business environment. The relation between staggered boards and firm value has been reported as negative (Bebchuk & Cohen, 2005). In a study on the relationship between board structure and bank performance, staggered boards (used as proxy for protection from threat of external takeover) was found to have some relation with performance (Pathan & Faff, 2013). Contrary to Bebchuk and Cohen (2005), staggered board is reported to have positive relation with firm value from a comprehensive time series data from 1978-2011 (Martijn Cremers et al., 2014). The authors show that firms' motivation to adopt staggered board stems from previous trend of low value which is corrected after staggering thus reconciling their results to existing results from

cross-sectional studies. Even though this current research is specifically about firm value, it is believed that the level of NPLs affect the value of the bank and staggered board may correlate other factors which affect NPLs. These inconclusiveness on staggered boards need to be settled in corporate governance research. In previous studies, staggered board is either captured under board structure (Pathan & Faff, 2013) or CEO or managerial entrenchment (Elyasiani & Zhang, 2017; Ghouma, 2017). Our current study classifies it under extrinsic board characteristics using a dummy variable of '1' if a bank has staggered boards and '0' if it does not and anticipate an inverse relation with NPLs.

Board gender diversity

The presence of females on boards of directors improves firm performance, provides a pluralistic view of pooling resources, skills and talents from diverse sources, increases market responsiveness and value and improves corporate governance (Doldor, Vinnicombe, & Gaughan, 2012; García-Meca, García-Sánchez, & Martínez-Ferrero, 2015; Liu, Wei, & Xie, 2014). When qualified women serve as board of directors, governance improves which translates into profitability. In the US, financial institutions that engaged in high subprime lending among other factors had low female representation on their boards (Muller-Kahle & Lewellyn, 2011). Studying OECD countries, Gulamhussen and Santa (2015) reported a negative relation between female representation on supervisory boards and risk taking. They again found that, markets valued some banks with females on the board. Sila, Gonzalez, and Hagendorff (2016) did not find any evidence of board room gender diversity on firm equity risk after controlling for reverse causality in a dynamic model. The influence of board diversity may vary across unitary and dual board governance structures in Europe (Farg & Mallin, 2017). The authors reported that females on supervisory and board of directors may reduce banks predisposition to financial crisis but those serving on management boards were not risk averse and showed a non-linear relation with financial fragility. Thus, the roles assigned to female directors may regulate their risk preferences. It seem to suggest that the presence of females on boards provide some safety nets for investors and potential investors and this could explain why the European Parliament is making it a regulatory requirement for listed companies to have at least 40% female representation on their non-executive boards by 2020 (European Commission, 2012).

However, Low, Roberts and Whiting (2015) caution against the imposition of female representation on boards (through quotas) especially in countries with strong cultural resistance. They report diminishing positive impact of women on boards in countries where women have higher economic participation and empowerment. Owen and Temesvary (2018) found non-linear relationship between gender diversity and bank performance and further cautions that, positive effect of women representation on boards will maximize value only for

heavily capitalized banks. Women bring innovativeness on the board but this is a function of the quality of management. These mixed reports about board gender diversity make this study worth pursuing especially on the relationship with NPLs.

Board average age

There is little to show on board characteristics research which have considered the age of board of directors and their relationship with non-performing loans in European banking. From a sample of US banks, directors above seventy years was used as proxy for seniority of board members in the model but was dropped because of its insignificance (Byrd, Cooperman, & Wolfe, 2010). In a particular one on bank credit risk and corporate governance structures in the US, Switzer and Wang (2013) used the age of the Chief Finance Officer (CFO) and found that banks with older CFOs had lower credit risk levels. In this current study, we cover the age of all board members represented by an average age. Talavera, Yin, and Zhang (2018) report that board age diversity is negatively related to bank financial performance; adding that the heterogeneity of board members' views on risks, prudence and value has the tendency to trigger intragroup conflict, which slows down board decision-making process.

Board tenure

Board tenure is the period designated to the board of directors to be in office. Research on board tenure has mixed results in corporate governance research. As board tenure increases, members become more committed to the firm they serve; thus a positive relation is reported between board tenure and commitment (Vafeas, 2003). Kaymak and Bektas (2008) found a negative relationship between board tenure and bank performance. With time, a long staying board may develop familiarity with management, which might affect their vigilance. A study by Byrd et al. (2010) on US banks revealed no significant relationship between board tenure and executive compensation for the entire sample. However, they found some relation, which support the CEO allegiance hypothesis for board tenure from six years and above using subsamples. Board tenure is measured by an average number of years served as provided by the databases or annual reports.

In the case of the US financial services industry from 1997-2005, Muller-Kahle and Lewellyn (2011) provide evidence that subprime lenders were characterized among other factors by less board tenure. Their study thus reports a relationship between board tenure and lending but not with the outcome of lending such as NPLs. Harjoto et al. (2018) described board tenure as task-oriented board performance and reported tenure as effective in the oversight of firm investment activities. Their study reports that task-oriented diversity like tenure

has implications for regulatory requirements. In all these researches cited, none reports the relationship between board tenure and NPLs. We expect an inverse relation between the variables.

Insider ownership

Insider ownership is measured by the percentage of shares held by management members as percentage of total shares. Compensating management with equity options will reduce the tendency to engage in value depleting actions especially loan creation. It is therefore assumed that an inverse relation exists between insider ownership and NPLs. There is a school of thought that regulations reduce the influence of managerial decisions on shareholder value and therefore internal monitoring of agents are of minimal relevance in minimizing the conflict of interest between the agent and the principal (Booth, Cornett, & Tehranian, 2002). Banks substitute between governance mechanisms that align the interests of shareholders and managers and reports statistically significant relationship between insider ownership and bank performance (Belkhir, 2006). However, these significances disappear with the introduction of board characteristics in the model. Belkhir (2006) posits that ownership structure and board characteristics are substitutes for bank performance, but our current study see them as complementary to monitoring credit risks. In another study, Chun, Nagano, and Lee (2011) report no effect of managerial ownership on bank risk in Japan and Korea but for the introduction of franchise value, a significant negative relation was recounted. Thus, bank franchise value served as disciplinary measure to managerial ownership, which according to them, confirms the moral hazard hypothesis.

Control variables

The control variables are bank and country-related variables. The bank characteristics that can affect monitoring NPLs for the purpose of this study is size. In the US, large banks with strong boards positively affect bank risk taking (Pathan, 2009). There are macro-economic factors that affect NPLs (Erdinç & Abazi, 2014). Among these country-specific factors include GDP, inflation and lending rates. We therefore control these variables in our model.

3. METHODOLOGY

The choice of a model that combines board characteristics with insider ownership in a single study is motivated by the work of Stockmans et al. (2013). According to Stockmans et al.

(2013), the effectiveness of board characteristics is conditional in nature. It is conditioned on the presence or suspicion of the agency problem. We hold same assumption and test whether mechanisms for dealing with agency problem will improve or be indifferent to the effectiveness of board characteristics in reducing NPLs.

$$NPL_{i,t} = \alpha + \beta \sum_{j=1}^6 BodXtics_{i,t} + \gamma InsiderOwn_{i,t} + \varphi Control_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $i = 1, \dots, 102$ banks, $t = 2008, \dots, 2014$, α is the constant, β, γ, φ , are coefficients to be estimated and ε is the error term. *BodXtics* represent the set of board characteristics which affect non-performing loans, *Insider Own* represent insider ownership and *Control* represents the set of control variables.

But board characteristics is a function of six variables which were used in this model

$$BodXtics = f(AvBodAge, BodDiver, StagBod, AvTenure, BodIndepen, BodSize) \quad (2)$$

where;

AvBodAge = average board age,
BodDiver = board diversity (percentage of females on board),
StaggBod = staggered board,
AvTenure = average board tenure,
BodIndepen = board independence and
BodSize represents board size

An extended model which contains all variables used can be found below.

$$NPL_{i,t} = \alpha + \beta_1 AvBoardAge_{i,t} + \beta_2 BodDiver_{i,t} + \beta_3 StagBod_{i,t} + \beta_4 AvTenure_{i,t} + \beta_5 BodIndepen_{i,t} + \beta_6 BodSize_{i,t} + \gamma InsiderOwn_{i,t} + \varphi_1 BanzSize_{i,t} + \varphi_2 Infla + \varphi_3 InterestRate + \varphi_4 GDP + \varepsilon_{i,t} \quad (3)$$

Data

The study obtained data from various sources. About 80% of the data was obtained from S&P Global (formerly SNL Financials). Some of the variables include financial data, insider ownership and board characteristics. However, there were some number of missing data and this was where we fell on other sources like Datastream, Orbis Bank Focus (formerly Bankscope) and company websites for annual reports. Developments after the global financial crisis include regulations and directives to intensify and improve corporate governance practices and supervisory mechanisms of banks. It is against this background that this study targets the crisis and post-crisis periods of 2008-2014.

The data covers 102 banks from 22 European countries. The data is an unbalanced panel due to missing data for some banks in certain years. In all, 599 bank-year observations were suitable for the analyses. Table 1 shows the summary. The key variables used for the study are NPLs, average board age, board gender diversity, staggered board, average board tenure, board independence, board size, insider ownership, bank size, inflation, interest rate and GDP. Data was collected for diversification and bank age for the purpose of sensitivity and endogeneity analyses. Banks with less than four years of available data on all the variables were not included in the study. In most cases, banks had data on financial information but not on corporate governance variables.

TABLE 1: SAMPLE DESCRIPTION

Countries	No of banks	No of observations	Years
Austria	2	8	2011-2014
Belgium	1	7	2008-2014
Bulgaria	2	13	2008-2014
Czech Republic	2	7	2008-2013
Denmark	18	113	2008-2014
Finland	2	12	2008-2014
France	4	22	2008-2014
Germany	6	27	2008-2014
Greece	5	35	2008-2014
Hungary	2	14	2008-2014
Ireland	3	21	2008-2014
Italy	15	105	2008-2014
Macedonia	1	7	2008-2014
Malta	1	7	2008-2014
Netherlands	1	7	2008-2014
Poland	10	67	2008-2014
Portugal	2	14	2008-2014
Romania	2	14	2008-2014
Slovenia	3	16	2008-2014
Spain	8	48	2008-2014
Sweden	3	12	2011-2014
UK	5	23	2008-2014
Total	102	599	

4. FINDINGS AND DISCUSSIONS

The results of the study follow in the next sections. This section comprises the descriptive statistics, correlation matrix, various regression analyses including endogeneity and discussion of results.

Descriptive statistics

The descriptive statistics covers the number of observations per variable, means, standard deviation and percentiles. The result can be found in Table 2.

TABLE 2: DESCRIPTIVE STATISTICS FOR BOARD CHARACTERISTICS, INSIDER OWNERSHIP AND NPLS

Variables	N	mean	sd	p25	p50	p75
NPLs	599	10.98	12.17	3.330	3.330	13.76
Average board age	599	58.19	4.814	56	56	61
Board diversity	599	0.237	0.296	0.0950	0.0950	0.286
Staggered board	599	0.272	0.445	0	0	1
Average tenure	593	4.686	2.238	3	3	6
Board independence	599	0.569	0.997	0.250	0.250	0.680
Board size	599	11.91	5.170	8	8	15
Insider ownership	599	1.669	7.895	0	0	0.010
Bank size	599	16.90	2.269	15	15	19
Inflation	599	2.060	1.656	0.890	0.890	3.196
Interest rate	596	3.003	2.973	0.573	0.573	4.757
GDP	598	-0.0499	2.800	-1.064	-1.064	1.625

Table 2 shows the summary statistics for the dependent variable NPLs, insider ownership, intrinsic and extrinsic board characteristics and control variables. The missing data in certain years on some variables is evident in the sample (N). The average bank has NPL of 10.98 and standard deviation 12.17. The mean and median the values of some of the variables are almost the same; for example, average age, average tenure, board size, bank size and inflation. The average bank has 1.67% percent of insider ownership and with about 24% of average female representation female representation on the board. On the average, board members are old (58 years) and this has implications for decision making (conservatism or aggressiveness) and risk-taking behaviour.

TABLE 3: CORRELATION MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12
NPLs (1)	1											
Average board age (2)	-0.085*	1										
Board diversity (3)	-0.141***	-0.006	1									
Staggered board (4)	0.0648	-0.051	0.137***	1								
Average tenure (5)	-0.0981*	0.273***	-0.0718	0.0084	1							
Board independence (6)	-0.0618	-0.0047	0.0366	-0.066	0.0278	1						
Board size (7)	-0.293***	0.333***	-0.097*	-0.066	0.112**	0.0181	1					
Insider ownership (8)	-0.163***	0.0046	-0.0404	-0.105*	0.0392	-0.0195	-0.0622	1				
Bank size (9)	-0.275***	0.3191	0.0138	-0.078	-0.109**	0.0261	0.567***	-0.176***	1			
Inflation (10)	0.0422	-0.0325	-0.0455	-0.0168	-0.0171	-0.03	-0.165***	0.0233	-0.149***	1		
Interest rate (11)	0.217***	-0.0277	-0.0345	-0.0118	-0.048	-0.086*	-0.138***	0.0593	-0.203***	0.434***	1	
GDP (12)	-0.0707	-0.0381	0.0574	-0.0332	-0.0128	-0.0464	-0.253***	0.0477	-0.0996*	0.170***	-0.010	1

*= $p < 0.1$, **= $p < 0.05$, ***= $p < 0.01$

Table 3 reports the correlation matrix for the variables. There are weak correlations between the independent variables with the highest correlation coefficient being 0.567 (board size and bank size). This is an indication that there is no problem of multicollinearity.

Empirical results

The regression of only the independent on the dependent variables shows no difference of the significance level when insider ownership is included in the model. Comparing Models 1 and 2, board average and diversity are significant at 95% confidence interval whilst board size and insider ownership are significant at 99% confidence interval. The control variables (bank and country macroeconomic factors) were introduced in Models 3 and 4 where no change is seen about the independent variables in Model 3. All the controls had various significance levels ranging from $p < 0.1$, 0.05 and 0.01 in Model 3 but the inclusion of insider ownership in Model 4 improves the relationship between board average and NPLs ($p < 0.1$). The robust standard errors were run for Models 5 and 6 where the former does not include insider ownership. The relevance of insider ownership is seen in Model 6 where the coefficient of board independence is significantly improved at $p < 0.05$ compared to $p < 0.1$ in Model 5. It can also be seen from Model 6 that average board age is significant ($p < 0.1$) which is not the case in previous models.

Board size ($\beta = 0.587$, standard error = 0.0887), board diversity ($\beta = -5.878$, standard error = 1.372) and insider ownership ($\beta = -0.366$, standard error = 0.043) are significant at 99% confidence interval. Other board characteristics that show significant relation with NPLs are board independence and average board age ($p < 0.05$). Apart from inflation, all control variables are important determinants of non-performing loans.

TABLE 4: T-TEST (MEAN COMPARISON) OF DIVERSIFIED AND NON-DIVERSIFIED BANKS

Variables	Non-diversified banks	Diversified banks	Difference	t-statistic
NPLs	12.8653	9.1233	3.742***	3.7997
<i>Panel A: Intrinsic board characteristics</i>				
Average board age	57.4007	58.9635	-1.5628***	-4.0160
Board diversity	0.2081	0.2665	-0.0583**	-2.4175
<i>Extrinsic board characteristics</i>				
Staggered board	0.2593	0.2857	-0.0265	-0.7255
Average tenure	4.6075	4.7592	-0.1517	-0.8238
Board independence	0.6207	0.5194	0.1012	1.2415
Board size	11.367	12.4518	-1.0848**	-2.5758

<i>Panel B: Insider ownership</i>				
Insider ownership	0.5267	2.8026	-2.2759***	-3.5559
<i>Panel C: Control variables</i>				
Bank size	16.5185	17.2824	-0.7639***	-4.1690
Inflation	2.0581	2.0639	-0.0058	-0.0430
Interest rate	2.7156	3.2948	-0.5792**	-2.3846
GDP	-0.2939	0.1863	-0.4803**	-2.1001

=** p<0.05 ** p<0.01 *** p<0.001”

We performed sensitivity analysis by classifying our sample into diversified and non-diversified banks to find out if significant differences exist in the chosen variables. These forms of classifications and further analysis controls for inconsistencies and provide confirmations to main results. We follow previous research in board characteristics and bank performance in adopting this approach to complement other robustness checks on our results (Leung, Taylor, & Evans, 2015; Sarkar & Sarkar, 2018). Table 4 shows the results.

Board characteristics and non-performing loans

There were two hypotheses proposed for the relationship between board characteristics and non-performing loans. The first hypothesis (H_{1a}) states that intrinsic board characteristics reduce NPLs. The results from the robust OLS regression shows that whilst one variable significantly reduces NPLs (board diversity; $p<0.01$), the other (average board age; $p<0.1$) increases it. The result shows that average board age increases the level of NPLs. With a mean age of 58years, it is normal for members to have reached an optimal level of experience acquired in practice to warrant efficient monitoring of managers. The positive relation between average age and NPLs is in contrast to our hypothesis. Contrary to earlier findings where Byrd et al. (2010) find no significant relationship between board age and CEO compensation, Switzer and Wang (2013) and Talavera et al. (2018) report inverse relations. The inverse relation between the number of females on board (board gender diversity) is consistent with literature and thus supports our hypothesis. Previous research has reported such negative association between gender diversity and board risk-taking behaviour (Gulamhussen & Santa, 2015; Muller-Kahle & Lewellyn, 2011) even though others make contrary findings.

The second part of the first hypothesis (H_{1b}) states that extrinsic board characteristics reduce NPLs. We find support for this hypothesis. The results from the baseline regression of the robust OLS regression finds average board tenure ($p<0.05$), board independence ($p<0.05$) and board size ($p<0.01$) to have significant negative effect on NPLs. Staggered board has negative but no significant relation with non-performing loans. Not much can be reported on

the relationship between board tenure and NPLs but with performance (Kaymak & Bektas, 2008). Board independence (mean = 0.56) is not too large for this study and consistent with previous studies, boards with not too large independence have better monitoring and value creation functions (Pablo; de Andres & Vallelado, 2008). Our results support existing literature that board independence leads to board effectiveness (Wagner, 2011) which in this case is reducing NPLs. Mean and median board sizes were 12 and 11 respectively indicate not too large board size among European banks. Board size has significant negative relation with NPLs thus confirming a study in Romania which established that board size reduces business failure risk (Armeanu et al., 2017).

Table 5 presents the baseline OLS regression estimating the relationship between NPLs and board characteristics and insider ownership. The sample comprises 102 banks from 22 European Union countries for the period 2008-2014. We collected data from S&P Global (formerly SNL Financials), Datastream, Bankscope (now Orbis Bank Focus) and annual reports from company websites. In models 1 and 2, the main independent variables were regressed on the dependent variable, in which Model 1 excludes insider ownership and Model 2 includes it. We introduced the control variables in Models 3 and 4 where the former excludes insider ownership and the latter has it in the model. In Models 5 and 6, we run robust standard errors for the model where Model 5 drops insider ownership and Model 6 includes it. In all cases, the inclusion of insider ownership to intrinsic and extrinsic board characteristics make differences in the relationships between the dependent and independent variables. The estimated coefficients showing the relationship between the variables have been shown whilst the standard errors are represented in parentheses. The table also reports the sample observations (N) and the R² for each of the models. The stars show the significance of the variables and the interpretation follows:

TABLE 5: OLS (BASELINE) REGRESSION FOR BOARD CHARACTERISTICS, INSIDER OWNERSHIP AND NPLs

	(1)	(2)	(3)	(4)	(5)	(6)
	NPLs	NPLs	NPLs	NPLs	NPLs	NPLs
Average board age	0.107	0.112	0.197	0.229*	0.197	0.229*
	(0.107)	(0.105)	(0.107)	(0.105)	(0.111)	(0.109)
Board gender diversity	-7.629***	-7.849***	-6.958***	-7.127***	-6.958***	-7.127***
	(1.616)	(1.588)	(1.573)	(1.531)	(0.938)	(0.955)
Staggered board	1.962	1.426	1.616	0.945	1.616	0.945
	(1.070)	(1.057)	(1.042)	(1.021)	(1.000)	(0.992)

Average board tenure	-0.480*	-0.434*	-0.619**	-0.624**	-0.619**	-0.624**
	(0.219)	(0.216)	(0.221)	(0.215)	(0.221)	(0.217)
Board independence	-0.513	-0.568	-0.400	-0.445	-0.400	-0.445*
	(0.472)	(0.464)	(0.460)	(0.447)	(0.206)	(0.203)
Board size	-0.730***	-0.764***	-0.598***	-0.574***	-0.598***	-0.574***
	(0.0968)	(0.0953)	(0.115)	(0.112)	(0.0941)	(0.0847)
Insider ownership		-0.282***		-0.333***		-0.333***
		(0.0589)		(0.0575)		(0.0312)
Bank size			-0.813**	-1.075***	-0.813**	-1.075***
			(0.264)	(0.261)	(0.248)	(0.238)
Inflation			-0.626*	-0.663*	-0.626	-0.663
			(0.314)	(0.305)	(0.432)	(0.416)
Interest rate			0.724***	0.750***	0.724**	0.750**
			(0.175)	(0.170)	(0.241)	(0.235)
GDP			-0.531**	-0.493**	-0.531*	-0.493*
			(0.172)	(0.168)	(0.206)	(0.202)
_cons	17.35**	17.97**	23.88***	27.06***	23.88***	27.06***
	(5.816)	(5.711)	(6.304)	(6.159)	(5.889)	(5.802)
N	593	593	590	590	590	590
R ²	0.129	0.162	0.193	0.237	0.193	0.237

*p<0.1, **p<0.05, ***p<0.01
Standard errors in parentheses

TABLE 6: 2SLS REGRESSION FOR BOARD CHARACTERISTICS, INSIDER OWNERSHIP AND NPLs

	(1)	(2)	(3)	(4)	(5)	(6)
	NPLs	NPLs	NPLs	NPLs	NPLs (robust s.e)	NPLs (robust s.e)
Staggered board	-5.791	-7.377	-3.607	-5.158	-3.607	-5.158
	(5.822)	(5.946)	(5.710)	(5.748)	(4.410)	(4.569)
Average board age	0.0681	0.0692	0.182	0.215*	0.182	0.215
	(0.114)	(0.114)	(0.110)	(0.108)	(0.114)	(0.113)
Board gender diversity	-6.018**	-6.082**	-5.851**	-5.870**	-5.851***	-5.870***
	(2.055)	(2.039)	(1.987)	(1.948)	(1.386)	(1.446)

Average board tenure	-0.421	-0.360	-0.595**	-0.597**	-0.595**	-0.597**
	(0.232)	(0.232)	(0.225)	(0.221)	(0.220)	(0.216)
Board independence	-0.761	-0.857	-0.573	-0.650	-0.573*	-0.650**
	(0.523)	(0.524)	(0.501)	(0.494)	(0.247)	(0.247)
Board size	-0.756***	-0.800***	-0.610***	-0.585***	-0.610***	-0.585***
	(0.102)	(0.103)	(0.117)	(0.115)	(0.100)	(0.0898)
Insider ownership		-0.334***		-0.372***		-0.372***
		(0.0708)		(0.0689)		(0.0445)
Bank size			-0.878**	-1.180***	-0.878***	-1.180***
			(0.276)	(0.284)	(0.259)	(0.259)
Inflation			-0.633*	-0.675*	-0.633	-0.675
			(0.318)	(0.312)	(0.420)	(0.402)
Interest rate			0.702***	0.727***	0.702**	0.727**
			(0.178)	(0.175)	(0.243)	(0.238)
GDP			-0.580**	-0.545**	-0.580**	-0.545**
			(0.182)	(0.177)	(0.209)	(0.205)
_cons	21.52**	22.76***	27.24***	31.31***	27.24***	31.31***
	(6.772)	(6.791)	(7.331)	(7.414)	(6.485)	(6.663)
N	593	593	590	590	590	590
R ²	0.051	0.063	0.158	0.190	0.158	0.190

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 shows the two-stage least squares regression for board characteristics, insider ownership and non-performing loans. Model 1 contains only board characteristics variables which shows only board gender diversity as significant predictors of NPLs. In Model 2, insider ownership was introduced into the model, but it did not make any significant improvement in the coefficients of the variables expect a marginal increase in the R². Model 3 contains the introduction of the control variables but without insider ownership. When insider ownership was introduced in Model 4, there is an improvement of the R² from 15.8% to 19% and average board age becoming significant at 90% confidence interval. The introduction of the control variables caused some of the independent variables significant in the model. Models 5 and 6 reports robust standard errors. There are no differences in the overall R² of the default and robust standard errors but an improvement in the significance of board independence and

drops in the significance of average board age and interest rate. In all the models, the inclusion of insider ownership reduced the standard errors except for bank size and staggered boards.

Insider ownership and non-performing loans

The second hypothesis states that insider ownership reduces NPLs. The negative coefficient of insider ownership in all the models confirms this hypothesis. Mean insider ownership is 1.64% among European banks. Contrary to earlier studies which report non-linear relationship between insider ownership and firm performance (Gulamhussen et al., 2012), we find a linear negative relation. Insider ownership reduces potential moral hazards which lead to losses such as NPLs, high performance and reduced risk-taking behaviours (Andreou et al., 2017; Moro & Fink, 2013).

The third hypothesis states that board characteristics and insider ownership reduce bank NPLs. The study confirmed the third hypothesis. The inclusion of insider ownership improves the significance of board characteristics variables.

Robustness analysis

The inclusion of bank and country-specific variables is meant to control for certain latent inter-relations between board characteristics and managerial ownership which affect the level of NPLs. We went further to perform some sensitivity analyses by dividing the sample into diversified and non-diversified banks, compared means to find significant differences. We run 2SLS instrumental variable regression address endogeneity.

We analysed the sensitivity of diversified and non-diversified banks for the model. Board diversity ($p < 0.001$), average board age ($p < 0.05$), board size ($p < 0.05$) and board independence ($p < 0.1$) significantly associate with NPLs for non-diversified banks. For diversified banks, average board tenure and board size have significant negative relation with NPLs at 95% confidence interval. This is consistent with previous research that banks with diversified incomes have minimal market risk exposure (Leung et al., 2015). The inclusion of insider ownership in the model for non-diversified did not change the overall explanatory power of the independent variables (19%). However, the contrary is observed in the case of diversified banks (from 30% to 33%) even though there are fewer significant board characteristics variables as compared to non-diversified banks.

TABLE 7: 2SLS REGRESSION FOR DIVERSIFIED AND NON-DIVERSIFIED BANKS

	(1)	(2)	(3)	(4)
	Non-diversified banks		Diversified banks	
	NPLs	NPLs	NPLs	NPLs
Staggered board	-7.036	-8.368	-1.221	-2.731
	(11.34)	(11.58)	(8.912)	(9.479)
Average board age	0.455**	0.437**	-0.0164	0.00296
	(0.169)	(0.168)	(0.149)	(0.150)
Board diversity	-9.712***	-9.609***	-2.579	-2.530
	(2.136)	(2.187)	(2.301)	(2.402)
Average board tenure	-0.556	-0.457	-0.588**	-0.640**
	(0.410)	(0.421)	(0.228)	(0.229)
Board independence	-0.880*	-0.955*	0.197	0.115
	(0.370)	(0.379)	(0.571)	(0.569)
Board size	-0.591**	-0.608**	-0.550**	-0.491**
	(0.209)	(0.210)	(0.190)	(0.169)
Bank size	-1.883***	-1.852***	0.177	-0.414
	(0.547)	(0.553)	(0.286)	(0.269)
Inflation	-1.367*	-1.350*	-0.384	-0.387
	(0.695)	(0.683)	(0.401)	(0.395)
Interest rate	0.161	0.181	1.442***	1.384***
	(0.358)	(0.354)	(0.284)	(0.279)
GDP	-0.563*	-0.515	-0.450	-0.514
	(0.282)	(0.284)	(0.367)	(0.378)
Insider ownership		-0.308***		-0.294***
		(0.0590)		(0.0775)
_cons	34.01**	34.68**	13.70	23.81*
	(12.66)	(12.74)	(9.937)	(11.43)
N	291	291	296	296
R-sq	0.190	0.189	0.299	0.332

Table 7 shows the 2SLS regression for diversified and non-diversified banks. A variable for diversification was constructed by expressing non-interest income as fraction over total income. Using the median value for diversification, we classified the data into diversified and non-diversified banks in a sensitivity analysis from the same data as explained in Table 5. For non-diversified banks, Model 1 represents the exclusion of insider ownership whilst Model 2 includes it. Models 3 and 4 report the exclusion and inclusion of insider ownership for diversified banks respectively. For non-diversified banks, intrinsic board characteristics (average age and board gender diversity) show significant ($p < 0.05$ and $p < 0.001$ respectively) relation with non-performing loans. Some extrinsic board characteristics and control variables are significant with the dependent variable. On the contrary, none of the intrinsic board characteristics is significant for diversified banks. Insider ownership improves the R^2 value for diversified banks but reduces it for non-diversified banks. Robust standard errors and R^2 results have been reported with the significance levels shown in stars. Bank size is negatively significant for non-diversified banks whilst interest rate is significantly positive for diversified banks.

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Endogeneity analysis

Research in corporate governance especially board characteristics has not been devoid of the problems of endogeneity which has the potential to confound the results (Faleye, Hoitash, & Hoitash, 2011). Endogeneity may arise because of omitted variable bias, unobserved heterogeneity, simultaneity or reverse causality. Fundamentally, a consistency test of the OLS estimator is hypothesized that there is no correlation between the regressors and the error term given as $E(u|X) = 0$. In all the models, staggered boards was found not to be significantly related to NPLs which is contrary to what we hypothesized in the explanation of variables. Our suspicion is that there are some omitted variables whose inclusion in the model would have made staggered boards and other board characteristics significantly related to the outcome variable. Staggered boards silence shareholder voice and at times lead to managerial entrenchment. Such extremisms end up seriously affecting asset quality which impair firm value. Staggered or classified boards increase corporate opacity and information asymmetry (Duru, Wang, & Zhao, 2013) which blurs firm transparency, perpetuated board and managerial inefficiency thereby leading to loan losses. We assume that staggered board is endogenous to the level of non-performing loans because of its ability to weaken the monitoring and supervisory mechanisms of supervisory and managerial board. The reasons behind the adoption of staggered boards may result in reverse causality (Cremers, Litov, & Sepe, 2017).

To statistically test these suspicions, we performed a two-stage least squares with instrumental variable on the OLS results (Belkhir, 2006) for the baseline model. This was followed by post-estimation analyses to test for endogeneity. We introduced bank age as instrument for the endogenous role of staggered board. Instrumental variables should be exogenous and clearly mimic the regressors. Bank age does not in itself significantly affect NPLs but may explain other factors related to NPLs such as strong bank-client relation, hiring of experienced staff and familiarity with the business environment. Older banks may enjoy certain advantages in the market or may have existing mechanisms to enhance board monitoring functions better than new banks.

In the first stage result, the instrumental variable shows significant relation with the endogenous variable (Model 2 of Table 8) thus justifying its choice for instrumentality. The second stage regresses the variables (which includes the instrumental variable, bank age) on the endogenous variable which is found in equation 4. The result is also seen in Model 2 of Table 8

$$\begin{aligned}
 StaggBod_{i,t} = & \delta_0 + \delta_1 AvBoardAge_{i,t} + \delta_2 BodDiver_{i,t} + \delta_3 AvTenure_{i,t} + \delta_4 BodIndepen_{i,t} \\
 & + \delta_5 BodSize_{i,t} + \delta_6 InsiderOwn_{i,t} + \delta_7 BankSize_{i,t} + \delta_8 Inflation_{i,t} + \delta_9 InterestRate_{i,t} + \delta_{10} GDP_{i,t} \\
 & + \delta_{11} BankAge + \mu_{i,t}
 \end{aligned} \tag{4}$$

A new variable for the residuals was estimated and included in the structural equation for Model 3 of Table 8. The overall R² for this model is not too different from that of the structural equation. In the test of endogeneity, the result was found to be insignificant and therefore we reject the hypothesis that staggered board is exogenous. The 2SLS was run for Model 4 after dealing with the endogeneity issues. The post estimation tests of endogeneity were performed. The Wu-Hausman test shows there are no omitted variables or simultaneity. The Durbin-Wu-Hausman test compares the instrumental variable and OLS estimates to determine if there is sufficient evidence to conclude they are close. If they are, then there is insufficient evidence to reject the null hypothesis. The result (19.5984) is above the criterion (F=10) which confirms that the instrument is not weak. The partial R² confirms the relation between the instrumental and endogenous variables and very significant (p<0.001; from Model 2 of Table 8).

TABLE 8: ENDOGENEITY TEST RESULTS

	(1)	(2)	(3)	(4)
	Baseline OLS	1 st stage regression	Residual	2sls
	NPLs	Staggered board	NPLs	NPLs
Average board age	0.229*	-0.00363	0.215*	0.215*
	(2.18)	(-0.86)	(2.03)	(1.99)
Board gender diversity	-7.127***	0.193**	-5.870**	-5.870**
	(-4.66)	(3.17)	(-3.07)	(-3.01)
Staggered board	0.945		-5.158	-5.158
	(0.93)		(-0.92)	(-0.90)
Average board tenure	-0.624**	0.00429	-0.597**	-0.597**
	(-2.90)	(0.50)	(-2.75)	(-2.70)
Board independence	-0.445	-0.0406*	-0.650	-0.650
	(-0.99)	(-2.26)	(-1.34)	(-1.32)
Board size	-0.574***	-0.00141	-0.585***	-0.585***
	(-5.13)	(-0.31)	(-5.21)	(-5.11)
Insider ownership	-0.333***	-0.00595**	-0.372***	-0.372***
	(-5.79)	(-2.60)	(-5.51)	(-5.40)
Bank size	-1.075***	-0.0154	-1.180***	-1.180***
	(-4.12)	(-1.48)	(-4.25)	(-4.16)
Inflation	-0.663*	-0.00166	-0.675*	-0.675*
	(-2.17)	(-0.14)	(-2.21)	(-2.17)
Interest rate	0.750***	0.00274	0.727***	0.727***
	(4.41)	(0.39)	(4.25)	(4.16)
GDP	-0.493**	-0.00524	-0.545**	-0.545**
	(-2.95)	(-0.78)	(-3.13)	(-3.07)
Bank age		0.0648***		
		(4.43)		
Residual			6.310	
			(1.10)	
_cons	27.06***	0.469	31.31***	31.31***
	(4.39)	(1.87)	(4.31)	(4.22)

Chi-sq (1):	1.23787 (p=0.2659)			
Wu-Hausman F test:	1.21314 (p=0.2712)			
Endogeneity tests:	R-sq: 0.0786			
	Adjusted R-sq: 0.061			
	Partial R-sq: 0.033			
Durbin-Wu-Hausman Chi-sq test:	19.5984			
N	590	590	590	590
R ²	0.237	0.079	0.239	0.190

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Arellano-Bond GMM estimation of board characteristics, insider ownership and NPLs

Since the study used a panel data, we used a dynamic model to compute the Arellano and Bond GMM estimation using the model in equation 5.

$$\Delta NPL_{it} = \delta + NPL_{it,t-1} + \beta_1 BodXtics_{it} + \beta_2 InsiderOwn_{it} + \beta_3 Contr_{it} + \mu_i + \varepsilon_{it} \quad (5)$$

Where NPL_{it} is the log of NPL for bank ‘i’ at the time ‘t’; μ_i is the bank-specific fixed effects, ε_i are time-varying error terms and $\beta_1, \beta_2, \beta_3$ are parameters to be estimated.

Our interest is the rate of change in NPLs and not the levels hence the lag of the dependent variable ($NPL_{it,t-1}$). This is to enable us determine the contribution of board characteristics and insider ownership variables to the rate of change in NPL levels.

We use the Hansen test because it is robust to autocorrelation and heteroscedasticity (Diaz-Serrano & Sackey, 2016). The result of the test shows that the χ^2 is not statistically significant hence confirming the validity of the instruments. The Arellano-Bond estimation for autocorrelation (AR1) and (AR2) shows that there is no serial correlation between the differenced variables used as instruments and the first differences of the residual. We follow Diaz-Serrano and Sackey to conclude that the instruments are good.

Table 9 shows the Arellano-Bond GMM estimation for board characteristics, insider ownership and non-performing loans. In the dynamic model, two stage estimation for the rate of change in NPLs is estimated to address the endogeneity problems. Using staggered boards as endogenous variable, the tests for the validity of instruments, autocorrelation and serial correlation satisfy specified assumptions for the Hansen test, AR(1) and AR(2) tests. The result show statistical significance for the intrinsic board characteristics (average board age ($p < 0.01$) and board gender diversity ($p < 0.05$)) and insider ownership ($p < 0.1$).

TABLE 9: ARELLANO-BOND GMM ESTIMATION

	(1)
Variable	NPLs _{t-1}
Average board age _{t-1}	0.188***
	(0.068)
Average tenure _{t-1}	0.194
	(0.184)
Board independence _{t-1}	-2.036
	(1.818)
Board diversity _{t-1}	-3.484**
	(1.511)
Board size _{t-1}	-0.061
	(0.061)
Insider ownership _{t-1}	-0.284*
	(0.165)
Constant	-7.734**
	(3.476)
Observations	506
Number of banks	97
Bank effect	YES
Hansen Test (stat.)	52.94
Test AR(1) (z-stat.)	-2.14
Test AR(2) (z-stat.)	-1.60

Discussion

The focus of this study is to establish how board characteristics (gender diversity, average board age, average tenure, staggered boards, board independence, board size) and insider ownership affect NPLs in European banking. We find that board characteristics and insider ownership are complementary approaches used to minimize NPLs in banking. This is contrary to the findings of Belkhir (2006) who reported the two as substitutable to bank performance. Using them as substitutes does not provide a holistic approach to address the complex market failure of dealing with NPLs which can trigger financial crisis. The nature of bank risks is so dynamic, complex and multifaceted that the framework we propose alone is not enough

to deal with it comprehensively. There are other parallel mechanisms for monitoring which add up to our findings such as board committees, internal and external audit, regulatory and supervisory bodies (Laeven & Levine, 2009; Upadhyay, Bhargava, & Faircloth, 2014; Xie, Davidson, Dadalt, Davidson Iii, & Dadalt, 2003).

Findings are consistent with Francis, Hasan, Koetter, and Wu (2012); who reported significant relation between board characteristics and bank loan contracting. Normatively, board of directors are accountable to the firm and investors seem to find it acceptable to pay for the value created by good governance. Board members have individual and collective responsibilities hence the need to consider variables that describe individual intrinsic characteristics (board age and gender) and group extrinsic variables (staggered board, board tenure, board independence and board size). We find confirmation for the negative relation between board characteristics and non-performing loans (Tarchouna et al., 2017). The application of effective governance principles such as transparency and accountability enhances effective monitoring which in turn reduces the creation loans that have potential to go bad. Good governance creates value by safeguarding assets not only for shareholders but also other indirect interest groups.

Contrary to earlier research that finds board gender diversity to increase portfolio risk (Berger, Kick, & Schaeck, 2014), we report that the inclusion of females on bank boards reduces NPLs. Women are conservative, risk averse and cautious with risk-taking (Fauzi, Basyith, & Ho, 2017). Owen and Temesvary (2018) found that most women appointed on boards are cautiously selected, have higher education, well-qualified, experienced and bring to the board some innovativeness which positively affect performance. The negative relation between gender diversity and NPLs reported in this study can be attributable to some of the reasons outlined in prior research. Our result provides empirical support and justification for the European Parliament's new directive for companies in member countries to have at least 40% female representation on company non-executive boards (European Commission, 2012). The resource dependency theory emphasizes a multicultural approach of harnessing human capital, skills and competencies from diverse sources to create added value to the firm (Doldor et al., 2012; Liu et al., 2014) by reducing NPLs. The relevance of female representation on board of directors of banks is not only peculiar to Europe where we studied but has been confirmed in major economies like China, the US other OECD countries (Farg & Mallin, 2017; Gulamhussen & Santa, 2015; Liu et al., 2014; Muller-Kahle & Lewellyn, 2011).

Board members have heterogeneous age distribution, which can explain a balanced attitude towards risk. Usually, risk appetite is lower for the old than the young board members (Switzer & Wang, 2013) and we believe from our study that an age range between 40s and 70s is a good mix for sound board performance. Unlike previous studies which found no significant relation between board age and performance (Byrd et al., 2010) and negative relation with financial performance (Talavera et al., 2018), we report a positive relation between average

board age and NPLs. It means that as board age increases, credit risk exposure gets high. This is consistent with Switzer and Wang (2013).

In this paper, we found significant negative relation between board size and board average tenure on NPLs. The choice of appropriate board composition by way of size (mean=12) improves the monitoring function and other roles and responsibilities (Himaj, 2014; Pathan, 2009). Our findings confirm existing empirical research that bank risks reduce with board size (Armeanu et al., 2017; Nakano & Nguyen, 2012; Pathan, 2009). This is because large board size might slow down deliberations and decision-making whilst small size might be overburdened with multiple tasks which might render them ineffective. On the contrary, firms seem to enjoy from the rich expertise of large boards as they bring their resources on board. We agree with earlier research which found non-linear relationship (de Andres & Vallelado, 2008) between board size and performance but also report a linear relation in our current work. With mean tenure of 5years, board of directors will be capable of executing all relevant policies and will be well informed enough to monitor managerial misbehaviour. However, as reported by a study in the US, the danger of board members aligning with management against the principal (shareholders) is likely to occur for boards whose tenure is high (Muller-Kahle & Lewellyn, 2011). We confirm that board tenure is effective in the oversight of management against loan losses (Harjoto et al., 2018). Board independence is significant in the robust baseline OLS regression. Shareholders and potential investors have confidence in the monitoring capabilities of independent board members and this is a value addition to the firm. Staggered boards have negative relation with NPLs but not significant.

The study found that, insider ownership significantly reduce NPLs in European banking. In all the models, its inclusion improved by reducing the standard errors and significance levels of not only some individual board characteristics but also the overall model. Insider ownership improved the significance level of average board age, board independence and some macroeconomic control variables in the model. Consistent with the agency theory, managerial opportunism is minimized when they are made part-owners (Fama & Jensen, 1983; Hagendorff et al., 2010). In the case of (Belkhir, 2006), when insider ownership and board characteristics were included in a model, the former lost its significance hence his conclusion that the two should be seen as substitutes. Our study finds the exact opposite where the two should be complementary to effective board monitoring. Other research had reported no relation between managerial ownership and bank risk (Chun et al., 2011) or non-linear relation (Gulamhussen et al., 2012). The negative relation reported between insider ownership and NPLs is a confirmation of how moral hazards in management which lead to mistrust and asset losses could be curbed by insider ownership (Andreou et al., 2017; Moro & Fink, 2013; D. Zhang et al., 2016).

For the control variables, bank size shows consistent inverse relation with NPLs. As banks increase its size, it is expected that more effective monitoring mechanisms are put in place to check loan losses. The significance of bank size is not only reported in the main models but also among non-diversified banks who rely heavily on interest incomes. All the macroeconomic variables interest rate GDP and inflation are significant. Inflation and GDP reduce NPLs whilst interest rate is positively related.

We report significant differences in the NPLs, average board age, insider ownership and bank size (all at 99% confidence interval). Board gender diversity and board size are also significant at 95% confidence interval from the t-test results. All the intrinsic board characteristics are statistically significant, and this confirms our classification criteria that intrinsic characteristics are individual-related and align to individual differences (Dalton & Dalton, 2011). Apart from board size, all other extrinsic characteristics are not statistically different because of the group belongingness (Marshal & Weatherson, 2018). Diversified banks have less reliance on interest incomes hence less NPLs as compared to non-diversified ones. Our study finds support for this assertion in literature thus confirming previous research that banks with diversified models have minimal risk (Fosu, Ntim, Coffie, & Murinde, 2017). It must however be noted that when banks are highly diversified, they become opaque, risk-loving and therefore exacerbate the moral hazards emphasized by the agency theory. In an environment where there is abuse of a staggered board system (Aguilera, 2005; Bebchuk & Cohen, 2005), managerial entrenchment becomes inevitable and may lead to high losses. The inclusion of insider ownership in the model shows relevance for diversified banks (from the R^2 values) than its exclusion. This supports the hypothesis and existing research that complementing board monitoring with managerial incentives maximizes the risk management function.

5. CONCLUSIONS

We examined the relation between board characteristics, insider ownership and non-performing loans in European banking. We introduced the first classification of board characteristics into intrinsic and extrinsic boards where the former covers individual-based characteristics and the latter on board collectiveness. The intrinsic characteristics depict board diversity whilst the extrinsic component covers the structure, composition and functioning of boards. The study tested and justified the inclusion of insider ownership as complement to effective board monitoring to reduce NPLs. Boards of European banks enjoy diversity economies due to the heterogeneous board age and female representation. This has the capacity to create meaningful board discussions, which will create value for shareholders and other stakeholders in their effort to monitor managerial opportunism. Our findings have strong support from the stakeholder, resource dependency and agency theories. This research

supports recent laws, policies and directives by the European Parliament, European Central Bank and bank supervisory authorities to address the debilitating NPLs issues in the financial services industry.

The study confirms earlier research which sees board composition (in this case characteristics) and ownership as complementary instead of substitutable governance mechanisms (Sur et al., 2013). Moral hazards exist in the credit cycle from the initiation through the monitoring to the retirement of loans. This is better addressed through managerial incentives such as insider ownership. The inclusion of insider ownership to board characteristics variables improves the relationship with bank NPL than when the former is excluded. Specifically, average board age, board gender diversity, board independence, average board tenure and insider ownership have significant negative relation with non-performing loans. However, average board age has significant positive relation with NPLs. Board characteristics and insider ownership reduce non-performing loans and therefore create value. The control variables (bank size, inflation, interest rate and GDP) are significantly related NPLs. It is not to say that board characteristics and insider ownership provide exhaustive framework for controlling banks' managerial behaviour but also external governance systems such as the role of external auditors and regulation can help to protect and create value for stakeholders.

Theoretical implications

The findings from this study conform to the stakeholder and agency theories. Board of directors through their characteristics such as average age, gender diversity, average tenure, independence and board size significantly reduce bank non-performing loans. The stakeholder theory emphasizes protection of all stakeholder interests and not only shareholders. The devastating effect of NPLs goes beyond only shareholders and such holistic approach has the tendency to minimize conflict of interest. The complementary role of insider ownership to board characteristics better reduces moral hazards explained by the agency problem. The human factors related to high NPLs can be addressed by making executives part owners of the firm so that they will have a duty to safeguard the assets of investors.

Practical implications

Non-performing loans continue to hamper the development of financial markets in emerging and major economies. Our study provides a diversified approach to ameliorating this obstacle to complement regulatory and prudential directives from banking authorities. The paper contributes to public policy on bank governance not only in Europe but other national and regional blocks. The directive by the European Parliament to enforce mandatory 40% female

representation on non-executive boards has been given relevance in this study. Our research contributes to the ongoing debate on the female quota on company boards and can serve as reference document to back this directive proposed.

In practice, the study provides a reliable framework for recruiting or engaging people to serve on boards. It is important to consider individual intrinsic characteristics that will help create for the organization by looking at the age, gender diversity and other intrinsic attributes of the individual to maximize firm value. The individual must be appointed to serve on the board if he/she possess the characteristics shareholders place much premium.

Limitations

The limitations to the study include non-availability of data for all banks for the period of study and beyond. This is a post-crisis period study; it would have been more appropriate if the period prior to the global financial crisis had been captured in the sample. We had this in mind but data was not available. There was inconsistency in the reported variables from different databases. Using data from various sources may suffer from such inconsistencies and non-standardization of metrics but it is also a confirmatory approach to credible and reliable data. We addressed this problem by confirmation from bank annual and corporate governance reports. Again, the sample is not very even, because some countries were lowly represented. It is against this background that we run diagnostic, sensitivity and robustness analyses. In spite of these limitations, the methodology is consistent with existing research and all assumptions and diagnostic tests passed statistically tests. These limitations cast no doubts about the findings of our study.

Future research

Future research could compare the pre and post-crises periods and consider how board monitoring and managerial incentives improve the value of the firm.

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