The Impact of Board Demographic Diversity on the Financial Performance of Banks in Ethiopia

By: Melese Sitotaw

A thesis submitted in partial fulfillment of the requirements for Masters of Business Administration-Finance (MBA)

Addis Ababa University

School of Graduate Studies

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Declaration

I, Melese Sitotaw (Id.No-GSR/1852/10), declare that all the sources used in writing this thesis have been duly acknowledged and is my original work. I also confirm that the thesis has not been submitted to, in part or in full, any other higher learning institution for the purpose of earning any degree.

_____ _____

Name Signature

Endorsement

This thesis has been submitted to Addis Ababa University, School of Graduate Studies for examination with my approval as an advisor.

_____ _____

Name of advisor signature

Addis Ababa University
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This is to testify that the thesis prepared by Melese Sitotaw entitled "the impact of board demographic diversity on the financial performance of banks in Ethiopia" which is submitted in partial fulfillment for the degree of Master of Business Administration(MBA) complies with the regulation of the university and meet the accepted standards with regard to originality and quality.

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Dean, Graduate studies **signature**

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Advisor **signature**

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External examiner **signature**

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Internal examiner **signature**

Acknowledgement

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Finally, I would like to thank people who have prepared lectures and tutorials on youtube. As this research was uncharted territory for me, I have heavily relied on those youtubers whenever I have difficulty in processing the data.

Abstract

This thesis examined the impact of demographic diversity in terms of gender, ethnicity and age of the BOD on financial performance of banks in Ethiopia. The theoretical foundations of the study suggest that the aspects of demographic diversity have positive, negative or no effect on financial. Financial performance- the dependent variable- was measured using ROA and ROE. The independent variables were gender, ethnic and age diversity. Gender was measured using percentage of women from the total board; ethnic diversity as a dummy variable and age diversity using CV of age. Data on board profile using a checklist and financial statements of banks was collected for five years period 2006-2010 E.C(2013/14-2017/18 G.C). The data was analyzed using fixed effect regression technique with the help of Stata. Hausman was used to choose between fixed and random effect models. The findings reveal that gender, ethnic and age diversity have no effect on financial performance. The empirical data from banks fails to establish any relationship between age, gender and ethnic diversity and ROA and ROE. Thus, the hypotheses that gender, ethnic and age diversity have an impact was not supported by the empirical data. The empirical data only supports the theoretical proposition of no relationship between the dependent and independent variables. All in all, this empirical study contributes to make sense of the inconclusive results of past studies and gives theoretical and practical implications for policy makers and the management of modern companies.

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Acronyms

DV- Dependent Variable

ID- Independent Variable

CV- Coefficient of Variation

RE- Random Effect

FE- Fixed Effect

ROA- Return on Asset

ROE- Return on Equity

NBE- National Bank of Ethiopia

CG- CG

BOD- BOD

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Chapter One

Introduction

1.1 Background of the study

Issues and mechanisms of corporate governance (CG) have witnessed huge public and academic interest over the past three decades. At the center of this enormous attention is how corporate management best protect the interest of shareholders. Generally, CG is understood to be the system which is responsible for directing and controlling a company (Adams, 2015; Mahadeo et al., 2019). According to agency theory, the board of directors (BOD) is the governance mechanism to control and monitor managers and aims to represent shareholder interests by increasing shareholder value and preventing opportunistic behavior of managers (Mori, 2014). In this sense, the BOD serves as proxy of shareholders and is expected to act in their best interest. The BOD has an important internal control function and is a crucial CG mechanism of firms.

The boards of directors of corporations are the most important decision-making Body responsible for approving major strategic and financial decisions. Its responsibilities span from making key financial and strategic decisions, such as approving changes in capital structure and mergers and acquisitions, to the difficult task of choosing the company's top executive leadership (Ferreira, 2011). The most frequently cited key functions of a board are monitoring and controlling managers; providing resources, information and counsel to managers; monitoring compliance with applicable laws and regulations; and linking the corporation to the external environment (Mori, 2014)

It is not surprising, therefore, the workings of corporate boards attracts substantial research (Mori, 2014; Eulerich and Velte, 2014; Adams, 2015; Mahadeo et al., 2019). But the focus of the researchers was on different aspects of boards. Management scholars consider boards as heterogeneous individuals who have not only had their own biases and prejudices, but their behavior is affected by social constraints and power relations. Consequently, diversity of director plays a key role in how boards function. Economists, on the other hand, view the board as a single BoDy where diversity is considered irrelevant except the question of independence of the board from management. Scholars of management are of the opinion that diversity positively affects financial performance since it leads to more effective strategic decision-making,

creativity and innovations. Time consuming process and integration costs are considered the downsides of diversified boards.

Board diversity is increasingly considered as a significant mechanism of good CG. However, whether a diverse or non-diverse board contributes to the efficiency of a company's management and monitoring is a question that needs to be answered. Hence, research on the relationship between board diversity and firm performance is important for better understanding whether homogeneity or heterogeneity of boards affect firm performance. One of the underlying factors for researching this topic is the inconclusiveness of the findings of previous studies on the issue. Moreover, regulators and standard setters are increasingly associating firm performance with board diversity (Eulerich and Velte, 2014). This calls for an empirical investigation of the impact of board diversity on performance of corporations. This study, thus, examines the relationship between board demographic diversity and financial performance of banks in Ethiopia.

1.2 Statement of the problem

Board diversity as a research agenda has recently been attracting the attention of researchers. For example, board diversity and internationalization (Rivas, 2012); board diversity, CG, and executive pay (Sarhan, Ntim, and Al-Najjar, 2018); board diversity beginning unpeel the onion (Hillman, 2015); CG more than a gender issues (Adams, 2016) and diversity, outside directors and firm valuation (Kim and Lim, 2010) are worth mentioning. Studying the association between board diversity and financial performance has been a theme that has particularly been focused on. Commonly, board diversity is treated in to two broad categories- observable and non-observable (Erhardt et al., 2003). Observable or demographic diversity consists of age, gender, race, and ethnicity whereas knowledge, education, personality, values and affection are the aspects non-observable or cognitive diversity. Of these categories, demographic diversity appears to be popular among researchers (Erhardt et al., 2003). Perhaps, difficulty in measuring most of the dimensions of cognitive diversity might have prevented researchers from studying it.

Previous research on the relationship of demographic diversity and financial performance is not in short supply (Liu, Wei, and Xie, 2014; Low, Roberts, and Whiting, 2015; Conyon and He, 2017; Chotiyaputta, 2018; Martín-ugedo and Minguez-vera, 2014; Carter et al., 2010; Marinova, Plantenga, and Remery, 2016; Dale-olsen et al., 2013; Mazzotta, Bronzetti, and Baldini, 2017:Adams and Ferreira, 2009; Ujunwa, Nwakoby, and Ugbam, 2012; Adusei, Akomea, and Poku, 2017; Shehata, Salhin, and El-helaly, 2017). However, the findings such studies have been

mixed. Some authors found positive relationship; others negative association and some found no relationship between board diversity and firm financial performance. The result of these studies has been mixed along the different aspects of board diversity such as gender, ethnic and age diversity.

Many authors have reported positive relationship between firm performance and board gender diversity (Liu, Wei, and Xie, 2014; Low, Roberts, and Whiting, 2015; Conyon and He, 2017; Chotiyaputta, 2018; Martín-ugedo and Minguez-vera, 2014). Some authors failed either to establish relationship or established negligible relationship between gender diversity and CG (Carter et al., 2010; Marinova, Plantenga, and Remery, 2016; Dale-olsen et al., 2013; Mazzotta, Bronzetti, and Baldini, 2017). A negative and significant association between the two variables has also been reported (Adams and Ferreira, 2009; Ujunwa, Nwakoby, and Ugbam, 2012; Adusei, Akomea, and Poku, 2017; Shehata, Salhin, and El-helaly, 2017). The mixed research results show that the relationship between women in the board to reflect board diversity and firm performance remains unclear. Moreover, since most of these studies are based on one specific country, the general effect of women in the BOD on firm performance remains to be investigated.

Another dimension of demographic diversity which is relatively unexplored is ethnic diversity. The reason is that most researches on board diversity concentrate on countries in the Western world where ethnic diversity is not much of an issue. Whenever ethnicity is taken up as a research agenda, it is often about whether ethnic or racial minorities are represented in board rooms or not. Not surprisingly, attempts to study the impact of ethnic diversity on financial performance are made mostly in Africa and Asia. Again, the results of these relatively few researches on ethnic diversity are inconclusive. For example, positive relationship between ethnic diversity and financial performance has been reported by some authors (Marimuthu, 2008; Ujunwa et al., 2012; Omaye, S. and P.O, Eriki, 2013; Cheong and Sinnakkannu, 2014; Mazzotta et al., 2017; Ogboi, Aderimiki, and Enilolobo, 2018). Other authors found that ethnic diversity has no impact on financial performance (Hassan et al., 2017; Carter et al., 2010).

Researches on age diversity among the BOD are limited. Compared to gender and ethnicity, age has received little research attention (Talavera, Yin, & Zhang, 2018). Yet, the results of previous empirical studies remain inconclusive. There has been reports of significant negative relation between age diversity and firm performance (Shehata, Salhin, and El-helaly, 2017; Eulerich and

Velte, 2014; Talavera et al., 2018). Age diversity is also reported to positively impact firm performance (Idoya, Ángeles and Jesús, 2015; Mahadeo et al., 2012; Mori, 2014).

Another justification for this study, in addition to inconclusive nature of studies on age, gender and ethnic diversity, is that most studies focus on developed nations. Studies on the impact of demographic diversity on financial performance in the context of developing countries, especially in sub-Saharan Africa, are relatively scarce. Moreover, dimensions such as ethnic diversity are more relevant to countries such as Ethiopia than countries that are homogeneous.
Thus, because previous research on demographic diversity reveals mixed result and focus mostly on developed nation, this research will try to address the following research questions.

- What is the effect gender of diversity on the financial performance of firms?
- How does ethnic diversity impact firm's financial performance?
- Does age heterogeneity affect financial performance of firms?

1.3 Objectives of the study

1.3.1 General objective

The general objective of the study was to assess the impact of board demographic diversity on the financial performance of banks in Ethiopia.

1.3.2 Specific objectives

The specific objectives of this study were: -

- to assess the impact of gender diversity on firm financial performance
- to identify the effect of ethnic diversity on firm financial performance
- to find out about the relationship between age diversity and firm financial performance

1.3.3 Hypothesis of the research

The following hypothesis is drawn based on literature review and having board size, firm size, leverage and firm age as control variables.

H1a: Gender diversity of BOD affects firm financial performance.
H1b: Ethnic diversity of BOD has an influence on firm financial performance.
H1c: Age diversity of BOD is related to firm financial performance.

1.4 Scope of the study

This study focused on demographic diversity of board members of banks in Ethiopia. Specifically, it has attempted to assess how the aspects of demographic diversity such as gender, age and ethnicity affect financial performance of banks. The coverage was strictly on these aspects of observable diversity. Thus, other aspects of demographic heterogeneity like race and non-observable aspects of diversity such as education, knowledge, experience, etc. have not been covered in this study.

1.5 Significance of the study

The review of previous research on this topic reveals diverse results. This research, therefore, contributes to the literature on the understanding of the effect of board diversity on financial performance. It seeks to expand up on prior knowledge by focusing on the impact of gender, ethnic and age diversity on performance of banks in Ethiopia. Further, it adds knowledge to the existing literature based on the third world context. The banking industry holds pivotal position in an economy because of the spillover effect it has on the overall economy. Thus, studies such as this contribute to establish a healthy banking industry.

It could also inform policy since issues covered in this research, particularly gender and ethnicity, are not only highly debated among the public but also realities of the country. To say it modestly, it could at least provide empirical evidence to substantiate the debate or pave the way for further and broader research in the area to inform policy. Therefore, regulatory institutions like NBE can learn from the result of this research and use the information as an input to improve CG in Ethiopia. Since the findings of this research tell how gender, age and ethnicity diversity affect financial performance, commercial banks will also benefit out of it. It is expected to inform these banks about their diversity strategy, if any, and based on it to decide whether to go for more diversity or less diversity.

1.6 Limitations of the study

There are some limitations that the author suggests to be considered in understanding the findings of this research. First, the data covers only five years period 2006-2010 E.C or 2013/14-2017/18 G.C which can be considered a relatively shorter period for a study such as this. In diversity studies it is common to employ longer period such us 10 and 15 years which can provide a better picture of the issue. The author was forced to choose 5 years period for practical

reason. One consideration is that the doubt the author has on availability of data for longer period. A more practical consideration was to have a balance panel data. Second, the study is carried out with the confines of different suggestions for measurement of variables, analysis methods and difference in context. This is because diversity research is still largely inconclusive. Measurement in diversity research is problematic especially in factors like ethnic diversity and age diversity. Different authors have used different ways of measuring the variables. Moreover, the use of fixed or random effect models is still contestable. Some of the diversity variables also dependent on the context they are found. All these factors will probably have an impact on the findings. Finally, most banks were less cooperative in providing data about their boards that is why the data collection took very long time. It would have been not possible to secure the data if it was without the researcher's perseverance, repeated visits to the banks and explanation about the research to all concerned BoDies. But even with these limitations, this study has contributed important information relating to the effect of diversity on performance. Accordingly, this research has significant theoretical, practical and empirical implications.

Chapter Two

Review of Related Literature

2.1 The role of board of directors in Corporate Governance

CG is pivotal to all firms. Generally, CG is understood to be the system which is responsible for directing and controlling a company (Adams, 2016). It comprises of a series of mechanisms through which the interests of management, the BOD, shareholders and other stakeholders may be aligned. It is a means to ensure and protect the interests of the shareholders or stakeholders of the society so that the leaders attend to the needs of all stakeholders whereby they can use their power and responsibility for the welfare of the company as well as of the society.

Extensive research has been conducted on the importance of CG around the world (Ujunwa, Nwakoby, and Ugbam, 2012;Adams, 2015; Eulerich and Velte, 2014; Mahadeo et al., 2019). Particularly, it has become a hot issue after the occurrence global financial in 2008. Further, Mahadeo et.al. (2019) argue that the keen interest in CG is not going to subside since bad management practices regularly happen. Bad management practices are always at odds with the interest of shareholders. Corporate scandals that took place in many countries has further increased the importance of the effective CG (Ujunwa et al., 2012). What these researches indicate is that CG determines longevity and sustainability of corporations. Corporations can survive and thrive if they are managed very well, i.e., always keeping in view the interests of shareholders and other stakeholders.

While shareholders may own corporations, they do not manage them. Instead they elect BOD in charge of monitoring the company's activities and the appointment of managers to run the business in the shareholders' best interest. Many authors emphasis the fact that boards of directors form an important CG mechanism (Adusei et al., 2017;Mahadeo et al., 2019; Hassan et al., 2017; Eulerich and Velte, 2014). Generally, BOD of a corporate entity represents a committee responsible for designing strategic path of the entity to ensure the firm is run properly and wealth maximization goal of shareholders is achieved. The BOD is one form of internal control mechanisms in corporations since the board members appoint, supervise and remunerate top managers in organizations in addition to strategy formulation (Mahadeo et al., 2019; Mori, 2014). Some of the specific functions of the BOD include controlling and monitoring managers; providing advice to them; monitoring if the firm is strictly working in compliance with the

relevant laws and regulations and linking the organization to the external environment (Carter et.al, 2010). In addition to its function, the bard also plays three roles: monitoring role, advisory role and resource provision role. Whereas monitoring is the process of hiring, promoting and assessing management, advisory role is about directors' involvement in firms' strategy formulation. The resource provision role refers to how directors can provide access to key resources for company (Mori, 2014).

Furthermore, board system is divided into one-tier (or unitary) board and two-tier (or dual) board system (Eulerich and Velte, 2014). One-tier board system is characterized by one single board consisting of executive and non-executive directors. Directors in one-tier board are elected by shareholders and responsible for all aspects of company activities. Meanwhile, two-tier board system consists of executive or management board and supervisory board. Management board runs the business whilst supervisory board oversees the direction of the business and supervises management board. In this case, there is a clear separation of management and control: a member of one board cannot be a member of another board. Supervisory board is elected by shareholder while management board is appointed by supervisory board. There are some implications of the different board systems. For example, one-tier board allows closer relationship and better information flow because all directors are in the same level. On the other hand, two-tier board system is more distinct and formal. However, both systems have many similarities.

Even if the notion of CG and the role of the BOD is understood to be similar, the legal environment in which CG is applied is not entirely the same across the globe (Sarhan et al., 2018). Regardless of the difference in legal environment in different countries, the BOD is an important governance mechanism. Thus, the board is responsible for balancing the interest management, the BOD, shareholders and other stakeholders even if the nature of the alignment between different interest groups may be partly determined by the specific legal environment.

The role of BOD in the banking industry is very crucial owing to the complexity of bank operations and opacity of bank lending (Talavera et al., 2018). This is so since other stakeholders like depositors are not able to carry out effective control over the operation of banks. Information asymmetry and very high coordination cost prevents depositors from doing so. Further, the importance of the role BOD of banks is emphasized because they are responsible for balancing

the interest of not only shareholders and depositors but also other stakeholders. Talavera et al. (2018) also describe the central role that the banking industry plays in the overall economy since the effect of bank failure spreads in to the overall economy. Also, banks are highly leveraged firms due mainly to the deposits taken from customers. These are two major reasons why the banking industry is heavily regulated.

The role of boards as a mechanism for CG of banks takes on special relevance in a framework of limited competition, intense regulation, and higher informational asymmetries due to the complexity of the banking business. Thus, the board becomes a key mechanism to monitor managers' behavior and to advise them on strategy identification and implementation. Bank directors' specific knowledge of the complexity of the banking business enables them to monitor and advise managers efficiently.

In recognition of such a pivotal role BOD play in CG, NBE has different mechanism to institute sound CG in banking industry in Ethiopia. The Banking Business Proclamation No, 592/2008 is enacted to license and supervise banks in the country. Article 14 of this proclamation provide National Bank of Ethiopia the power to issue directives on various aspects of the operation of the boards of directors. NBE has a say on age, qualification, experience, selection, tenure, and compensation etc. of BOD of banks in Ethiopia. For example, a minimum of age of 30 years, bachelor degrees, relevant experience etc. are the requirements to be a member of the BOD. Moreover, the selection of the BOD is subject to approval by NBE. It has also issued directives on board size, duties and responsibilities and years of service of directors (Proclamation No. 592, 2008; Directive No. SBB 49, 2011)

2.2 Firm Performance

Building and sustaining a superior performance is the principal objective of a firm. Because of this, research in management has been dominated by trying to explain the difference in performance between firms (Gentry, 2010). However, firm performance is measured in different ways especially when it is used as dependent variable in research. Gentry (2010) are of the opinion that although firm performance is a multidimensional construct including operational effectiveness, corporate reputation and organizational survival, financial performance is the most extensively used indicator. On a similar vein, Dale-Olsen et al. (2013) held that financial performance, customer satisfaction, employee satisfaction, social performance, environmental performance etc. are some of the measures of firm performance that have been used. However,

financial performance is the most commonly used indicator of firm performance (Dale-Olsen et al., 2013). Often, financial performance relates to firm's ability to generate profit or income. It is used as a general measure of business results, i.e., how well company doing its business activities. It can also be used to compare among companies within an industry (Dale-olsen et al., 2013; Eulerich and Velte, 2014; Conyon and He, 2017)

According to Dale-olsen et al.(2013), Adams (2015), Eulerich and Velte (2014), Conyan and He(2017) and Gentry (2010),there are two most commonly used types of measurements of financial performance- accounting-based and market-based measures. Whereas market-based measures are based on shareholders perspectives based on current information, accounting based measures rely on historical records of the firm. Moreover, accounting measures have short term time view as opposed to long term time perspective of market-based measures. The market-based indicators of financial performance such as share prices and share price appreciation are results of the stock market process. Tobin Q is the most commonly used market-based measure in diversity research. Tobin Q is calculated as a ratio of current market valuation of firm and the replacement costs of the firm's assets (often measured as the book value of the firm's assets). Another market-based measure of firm performance is the return on stocks.

Accounting based indicators of performance include return on asset (ROA), return on investment (ROI), return on equity (ROE), return on sales (ROS), and other accounting ratios. These measures are related to managerial policies: how management allocates funds to different projects. It is, therefore, possible to generalize that accounting based measures express internal managerial performance and decision-making capability, rather than external market response. However, both market and accounting- based measures of financial performance have their own limitations (Dale-Olsen et al., 2013). They cannot be taken to be perfect or flawless. For example, sensitivity to changing accounting practices; being short–run measures of performance and prone to management manipulation are limitations of accounting-based measures of performance. On the other hand, market-based measures like return on stocks suffer from what is known as anticipation problem. For example, when there is a change in broad of directors, the market prices change based on anticipation of future performance not based on what the change in board causes. Yet, both accounting-based and market-based measures are accepted as valid measures of firm performance(Gentry, 2010)

2.3 Theoretical Foundation

Given the complexity of the relationship between board diversity and firm performance, no one theory can provide adequate theoretical basis for a study (Carter etal., 2010; Sarhan, 2018; Idoya, Ángeles and Jesús,2015; Hassan and Marimuthu, 2019). It is, therefore, a matter of practical necessity and a common practice to rely on several theories to establish the theoretical foundation for this study. Eulerich and Velte (2014) enumerate agency theory, resource-dependency theory, human capital theory, upper echelon theory, stewardship theory, the critical mass theory, social psychological theory, and social congnitive theory as potential frameworks used to understand the link between board diversity and firm performance. However, the most commonly used theories to study the relationship between board diversity and firm performance are agency theory, resource-dependency theory, human capital theory and upper echelon theory (Carter etal., 2010; Ujunwa et al., 2012; Hassan and Marimuthu, 2019; Talavera et al., 2018; Adusei et al., 2017; Ferrero-ferrero et al., 2015; Sarhan, 2018). These theories are briefly discussed below.

2.3.1 Agency Theory

Most researches exploring the relation between board diversity and firm performance depend on agency theory (Ujunwa, Nwakoby, and Ugbam, 2012; Talavera, Yin, and Zhang, 2018; Eulerich and Velte, 2014; Sarhan, 2018). The main tenet of this theory is that the separation between ownership and management leads to what is commonly known as agency problem- the self-interest maximization behavior by management may not necessarily be in the best interest of shareholders objective of wealth maximization. Agency problem manifest itself in the form of adverse selection or moral hazard resulting in agency cost (Ujunwa, Nwakoby, and Ugbam, 2012). Alleviating the agency cost, therefore, require an internal control and monitoring mechanism to regularly monitor the behavior of management. According to this theory, even if the effectiveness of monitoring mechanism depends on the level of information asymmetry between the two parties, the BOD is an important internal control mechanism instituted to reduce agency problem. In this context BOD act as guardians of shareholders' interests. Heterogeneous boards, according to agency theory, are most likely more independent and are hence more effective in their monitoring and control role (Sarhan et al., 2018). In addition, such boards are more coordinated; better at decision making and provide better quality and impartial advice to management. Board diversity, hence, helps to enhance firm performance.

2.3.2 Resource Dependency Theory

Another important perspective in board diversity studies is resource dependency theory. The firm depends on its environment for resources needed to be successful (Carter et al., 2010; Talavera et al., 2018; Eulerich and Velte, 2014). According to this theory, the key role of the BOD is not only to control and monitor the managers but also providing resources. Acquiring resource by establishing relation with external organizations and groups is the key to reduce this dependency. Hence, the BOD is viewed as a strategic source of resources. Particularly, provision of information and expertise; creation of channels of communication with vital parties; provision of commitments of support from important organizations or groups in the external environments and creation of firm's legitimacy in the external environment (Carter et al., 2010).

Diverse boards have different access to resources (Carter etal., 2010). As a result, a diverse board is better in securing resources from the environment than less diverse boards, because diverse boards have better access to information, contacts and networks. Thus, boards with different age, ethnicity, gender, education etc. have better access to resources from the external constituencies (Talavera et al., 2018). This reduces uncertainty and enhances firm performance.

2.3.3 Human Capital Theory

Human capital theory suggest that the knowledge, education, experience and skills possessed by individual can be employed to benefit organizations (Carter et al., 2010; Talavera et al., 2018). It follows that BOD with different knowledge, skills, competences and other attributes emBoDied in individuals that are relevant to economic activity provide unique human capital that can be used to influence the outcome of the firm. Thus, it is possible to conclude that human capital theory somehow complements resource-based theory.

Diversity in knowledge, skills and experience of board members influences the effectiveness of the execution of the monitoring and resources provision roles. Members of the board bring unique human capital to the BOD, because they have different levels of education and other experiences. Unique human capital diversifies the BOD. Decision making will be enhanced due to unique new perspectives and knowledge. Therefore, the human capital theory argues that firm performance is affected by board diversity as a result of unique human capital in the BOD (Carter et al., 2010).

2.3.4 Upper Echelon Theory

Another theory which is getting wide attention in diversity study is upper echelon theory. The theory states that the organization and its outcomes are the results of the characteristics of its top management- upper echelon (Ferrero-ferrero et al., 2015; Hassan and Marimuthu, 2019; Adusei et al., 2017; Tarus and Aime, 2014). According to this theory, firms behave as mirrors of their top executives (board directors, chief executive officer, and top management team). It argues that complex decision such as strategic choice is explained more by the behavior of top management than the process involved in strategic management. It specifically states about how demographic characteristics of BOD might be reflected in the performance of the firm since the personality of top management shapes their decision and understanding of their situation.

There are two arguments at the heart of upper echelon theory as far as how the behavior of top management affects firm performance (Ferrero-Ferrero et al., 2015; Tarus and Aime, 2014). The first proposition is that psychological and cognitive behavior of top executives influences their management orientation thereby firm performance. However, demographic characteristics of BOD are taken a proxy to their psychological characteristics. Second, the outcome of a firm is explained by analyzing the characteristics of top management team than individual behaviors of members of the top management.

2.4 Board Diversity and its Effects on Firm Financial Performance

2.4.1 Board Diversity

Diversity is a concept of variation among elements. For this research purpose, therefore, diversity is considered to be any difference in attributes between persons that helps to distinguishes one individual from the other (Erhardt, Werbel, and Shrader, 2003; Hassan, 2017; Rivas, 2012). In simple terms, board diversity refers to variations among members with respect to the different qualities, characteristics, and expertise of the individuals in relation to the decision-making in the board. Literature on board diversity makes distinction between two types of diversity: observable (demographic) and non-observable (cognitive/structural) diversity (Adusei et.al., 2017; Mahadeo et al., 2019). Observable board diversity can be understood in terms of demographic diversity such as gender, age, and nationality or racial background which are visible attributes, while differences in non-observable attributes such as cultural values, educational (knowledge) or personality characteristics represent cognitive diversity

Board diversity is justified from both ethical and economic reasons (Ujunwa, Nwakoby, and Ugbam, 2012;Campbell and Mınguez-Vera, 2008). The ethical perspective argues about the desirability of board diversity since excluding some groups of the society such as women, age groups, ethnic groups, religious groups etc. is considered unjust and inequitable (Rivas, 2012). The premises of this argument are that inequitable societies would find it very hard to sustain itself. Additionally, board diversity is considered as one mechanism for improving the access to power for those sections of the society that have historically been excluded from positions of power. Also, board diversity is associated with the notion of equality of representation and ultimately to the ideal of fair outcomes in the society. Mahadeo et al. (2012) argue that this egalitarian perspective justification for board diversity has ethical objective and does not presuppose connection to firm performance. In the simplest form, the foundation of the economic case for board diversity lies in the belief that board composition affects the way a board carries out its responsibilities- controlling management and service provision role- and that healthy board composition increases the effectiveness of board actions. Further, the business case for board diversity argues that diversity promotes the functional ability of the board, particularly its ability to engage in complex problem solving, strategic decision making, and management monitoring. Therefore, the board's increased effectiveness, in turn, enhances firm performance, productivity, and shareholder value.

2.4.2 Board Diversity and its Effect on Firm Financial performance

At general level, board diversity is thought of having both positive and negative impact on firm performance. Hence, there exist several arguments both in favor of and against diversity in boardrooms. To the best of my reading, arguments in of favor diversity are more pronounced and prevalent than arguments of homogeneity. In the next few paragraphs, these debates will be presented.

In most cases, diversity of board members in terms age, gender, ethnicity, education, etc. is linked to a firm's competitive advantage relative to companies with less diversity (Campbell and Mínguez-Vera, 2008; Ujunwa et al., 2012;Rivas, 2012; Hassan and Marimuthu, 2018; Eulerich et al., 2017; Iren, 2016; Kılıç and Kuzey, 2016; Hillman, 2015; Choi, Jeong, and Lee, 2014; Mazzotta et al., 2017). These advocates of positive link between diversity and financial performance put forth several reasons to support their claim. Better decision making by exploring more alternatives, better understanding of the market and link with the environment

which improves innovation and creativity, improved firm image (Ujunwa et al., 2012; Hillman, 2015; Hassan and Marimuthu, 2018; Eulerich et al., 2017); increase in diversity of opinions and alleviation of group think (Iren, 2016); assurance to stakeholders that boards are pooled from various background and reduction of uncertainty(Rivas, 2012); and enhanced problem solving and increased ability in identifying the needs and interest of different stakeholders (Kılıçand Kuzey, 2016) are to just mention some. For example, it has been proposed that diversity promotes a better understanding of the marketplace. Understanding the market place could create value for the company since the board would be in a better position to respond to the market. When the marketplace becomes increasingly diverse and globalized, it would be beneficial that the company match the market and external stakeholders with a similarly diverse offering. To sum up, because of the reasons mentioned above, the board will be in a better position to effectively discharge its roles that results in better firm performance.

The other side of the argument is that board diversity impedes firm performance. Even if not as prevalent and vigorous as pro-diversity authors, there are arguments against board diversity (Ujunwa et al., 2012; Eulerich et al., 2017; Adusei et al., 2017; Kim and Lim, 2010). For example, Ujunwa et al. (2012) and Adusei et al. (2017) wrote that decision making of heterogeneous boards is time taking and in effective as they explore, evaluate and reconcile diverse opinions and alternatives. The cost of such a slow decision-making process is more to firms operating in a highly competitive environment where the ability to quickly react to changes in a market is a matter of survival. Board diversity may also corrode group cohesion and lead to a board whose members are less cooperative and experience more emotional conflicts (Eulerich et al., 2017). The study by Kim and Lim (2010) argue that prevalence of conflict in diversified boards may limit the possibility of initiating and implementing strategic changes in response to environmental turbulence. This potentially results in inefficiencies and complexities in board work. Generally, diversity might lead to lower firm performance due to slow decision-making, different objectives, more conflicts, slow response to changes etc.

However, the general discussion of the effect of board diversity on financial performance of firms will not be adequate to establish a solid theoretical and empirical foundation for such a study. It is, therefore, necessary to discuss the link between financial performance and each elements of demographic diversity under investigation. The following paragraphs will present the relationship between gender, age and ethnic diversity and financial performance of firms.

2.4.3 Gender Diversity and Financial Performance

The relation between board gender diversity- the presence of women directors in the board- and firm performance is arguably the most extensively and debated element of board composition (Mahadeo et al., 2012). However, the debate is still outstanding since empirical research shows mixed results. Previous literature establishes positive, negative or no relationship between women in the BOD and firm performance. The following paragraphs discuss these relationships in detail.

Low, Roberts, and Whiting (2015) found positive relationship between inclusions of women in board room and financial performance measured by return on equity (ROE). Carter et al. (2003) examine a sample of US firms and find a positive relationship between board gender diversity and Tobin's Q. Moreover, Liu, Wei, and Xie (2014) documented a positive and significant relationship between gender diversity and firm performance by studying a sample of listed firms in China. Also, the study of Spanish SMEs by Martín-ugedo and Minguez-vera (2009) revealed that the presence of women on the board has increased return on assset(ROA). The inclusion of women in the boared is found to improve financil performance of firms in Thiland as measured by Tobin Q and return on asset (ROA)(Chotiyaputta & Yoon, 2018). Also, gender diversity is also found to impact firm financial performance positively (Hassan, Marimuth, Tariq, and Aqeel, 2017). Other researches that found positive link between gender diversity on the board and the financial performance of the company (Campbell and Mínguez-Vera, 2008; Erhardt et al., 2003; Gordini and Rancati, 2017).

These authors provided different explanations to substantiate the positive link between gender diversity and firm financial performance. These are gender related differences that could explain the difference in behavior and skills between women and men. Specifically, difference in the inborn characteristics between women and men could be a factor for the success of companies. Iren (2016) and Gordini and Rancati (2017), for instance, wrote that women tend to be more risk averse and strategically less aggressive than men. This enriches the boardroom with different perspectives than it would be otherwise. Gender diverse boards are reported to be better monitors, more effective and have less attendance problems (Adams and Ferreira, 2009). Furthermore, Carter et al. (2003) and Erhardt et al. (2003) agree on the fact that a wider range of perspectives among the board members can improve the performance of firms because of the better decision-making. Another profound argument by Carter et al. (2003) is diversity within the

boardroom reflects the diversity among stakeholders, which leads to that the company will be better off serving and retaining the market. Improved problem solving due to wider perspective is another reason given (Campbell and Mínguez-Vera, 2008). Hillman (2015) put forward better understanding of the market; mentoring others; innovativeness and more ethical as values that women bring to the board. Finally, Chotiyaputta and Yoon (2018) explain that a company with a gender diverse board may be more interesting to invest in for socially responsible investors.

In contrary, there are studies, although limited in number, which shows a negative link between gender diversity in the boardroom and financial performance. Adams and Ferreira (2009) found that more gender diverse boards devote more effort to monitoring managers. Besides, they found a negative relationship between the proportion of women on the board and Tobin's Q in an analysis of US firms. The result of the study of Nigerian quoted firms show that gender diversity was negatively linked with firm performance (Ujunwa et al., 2012b). Adusei, Akomea, and Poku (2017) also found negative association in a microfinance setting. In their research in the UK using a sample of 169 listed firms, Shehata, Salhin, and El-helaly (2017) found out significant negative relationship between both accounting and market performance and gender diversity.

There are also studies that have established no relationship between gender diversity and firm financial performance. Research of Carter et al. (2010) found no relationship between women in the BOD and firm performance. This research is based on U.S. firms. Another research with a related result is that of Dale-olsen et al. (2013). They found negligible impact of board women quota on Norwegian firms. Using the percentage of women as a measure of gender diversity, Mazzotta, Bronzetti, and Baldini (2017) found that female directors have no effect on firm performance. Based on the business case for gender diversity, Marinova, Plantenga, and Remery (2016) conducted a study in the Netherlands and Denmark. They used 186 listed firms to measure Tobin Q but found no relationship between board diversity and firm performance.

For the sake of convenience, the author preferred to summarize the review of empirical literature on the association between gender diversity and firm financial performance in the table below.

Table 1: summary of empirical research on the relationship between gender diversity and firm performance

Name of Author(s)	Year of publication	Nature of relationship between gender diversity and firm financial performance
Chotiyaputta and Yoon	2018	Positive relation
Hassan et al.	2017	Positive relation
Gordini and Rancati	2017	Positive relation
Low, Roberts, and Whiting	2015	Positive relation
Liu, Wei, and Xie	2014	Positive relation
Martín-ugedo and Minguez-vera	2014	Positive relation
Campbell and Mínguez-Vera	2008	Positive relation
Erhardt et al.	2003	Positive relation
Carter et al.	2003	Positive relation
Adusei, Akomea, and Poku	2017	Negative relation
Shehata, Salhin, and El-helaly	2017	Negative relation
Ujunwa, Nwakoby, & Ugbam	2012	Negative relation
Adams and Ferreira	2009	Negative relation
Mazzotta, Bronzetti, & Baldini	2017	No relationship
Marinova,Plantenga & Remery	2016	No relationship
Dale-olsen et al.	2013	No relationship
Carter et al.	2010	No relationship

Source: author's compilation

Based on the empirical literature presented above, it is necessary to hypothesize the relationship between board diversity and firm financial performance. Since most of the previous studies show mixed result, the hypothesis to be tested is:

H1a: Gender diversity of BOD affects firm's financial performance.

2.4.4 Ethnic Diversity and Financial Performance

Like gender diversity, empirical evidence on ethnic diversity is mixed even if there is limited interest in studying it. Most of the studies of ethnic diversity are in Africa and Asia. Ujunwa, Nwakoby, and Ugbam (2012) found that firm performance of quoted Nigerian firms was

positively predicted by board ethnic diversity. Even though it might increase board size, increasing ethnic representation, according to them, improves firm performance as it enhances access to different external resources. Using data from quoted deposit money banks in Nigeria and Tobin Q as performance indicators, Ogboi, Aderimiki and Enilolobo (2018) reported significance positive relationship between ethnic diversity and firm performance. The explanation is that the directors of ethnically diverse boards have different ways of thinking and can thus analyze a matter at hand from a variety of perspectives. But they also reported, insignificant negative relationship between firm performance and ethnic diversity when it is measured using ROA. Another paper done in Nigeria examined board ethnic diversity and firms' financial performance and found that the presence of three major ethnic groups is negatively associated with firm performance. The ratio of the three major tribes to the total board size was proxy for board ethnic diversity in this study (Omaye and Eriki, 2013)

A research in Malaysia by Cheong and Sinnakkannu (2014) using Herfindahl-Hirschman Index to measure ethnic diversity (ethnicity is the largest representation of a single race) found a significant positive relationship between ethnic diversity and firm financial performance. Another research on the same country reported that ethnic diversity has no impact on firm performance (Hassan et al., 2018). However, the measurement of ethnic diversity is different. This research used the number of non-Malays as a measurement for ethnic diversity. Moreover, Carter et al. (2010) examined the inclusion of ethnic minority directors on the board. Specifically, they investigated the relationship between the number of ethnic minority directors on the board and financial performance measured as ROA and Tobin's Q. They reported no significant relationship between ethnic diversity of the board and financial performance for a sample of major US corporations.

Based on the empirical research review above the following hypothesis is formulated.

H1b: Ethnic diversity of BOD has an influence on firm financial performance.

2.4.5 Age Diversity and Financial Performance

The research on age diversity is much less developed than research on race and gender, suggesting the need for new paradigms and new approaches to studying age diversity. Moreover, despite the growing number of international initiatives that encourage age diversity to improve the overall level of knowledge on the top management team, its potential effects on performance are not yet fully understood and the limited empirical studies show inconclusive results.

Examining the effect of age diversity on bank profitability, Talavera, Yin, and Zhang (2018) found significant negative association. Specifically, ROA and ROE got reduced by 12.80% and 12.75%, respectively, for a two standard deviation increase in age diversity. The justification they provided was the costs of board age diversity outweigh the benefits. Heterogeneous boards have less cohesion that makes board communication difficult, results in conflicts and less cooperation. These adversities of diversity offset the benefit driven from providing comprehensive perspectives, better monitoring and different external information.

A similar study in German two-tier corporate board system by using data on 149 publicly listed German organizations reported negative link between age diversity and firm performance (Eulerich and Velte, 2017). They presented their justfication by considering diversity as a double age swored. One one hand, diversity can be a source of competitive advanatage for firms. On the ther hand, diversity result in complex decision making process by reducing communication among the memebres. This further could lead to reduced group cohesivenss which potentially affect management qiality and firm performance negatively. Moreover, the finding of a research in the UK reported a significant negative relationship between age diversity and firm performance (Shehata et al., 2017). Based on their finding, they recommended for increasing the proportion of young board members as it is found to have been associated with improved financial performance.

There are also studies that reported positive relationship between age diversity and firm performance. For example, Mori (2014) empirically analyzed microfinance institution in Kenya, Tanzania and Uganda and discovered that directors' ability to monitor and provide resources to the board and their age are positively related. The improvement in directors' ability to monitor and provide resources obviously contributes positively to firm performance as agency and resource-based theories postulate. A positive association between generalized age diversity and corporate performance is also established by using data from a sample of European listed firms (Ferrero-Ferrero et al., 2015). This study used a different approach in arriving at such a finding. It studied both generalized age diversity and age diversity as separation, variety and disparity based on Harrison and Klein's diversity typology.

Based on the empirical research review above the following hypothesis is formulated.

H1C: Age diversity of BOD is related to firm financial performance

Chapter Three

Research Methodology

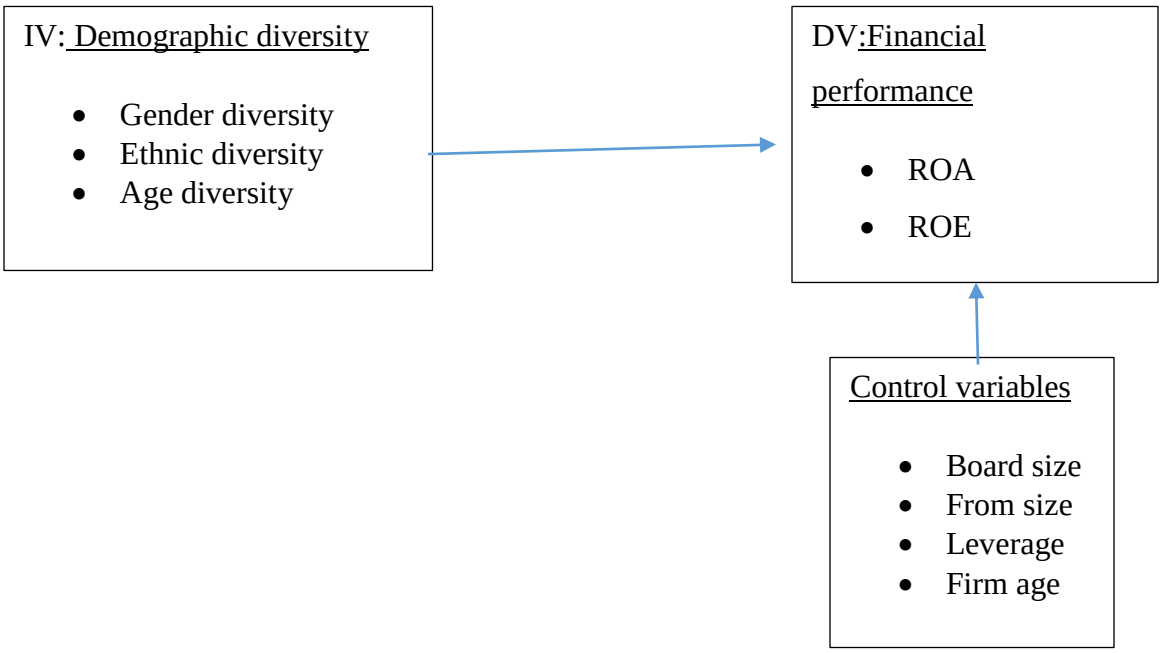
3.1. Research Design

This study examined the impact of board demographic diversity on performance commercial banks in Ethiopia using the bank's boards as unit of analysis. Since it is an impact study, the appropriate research design employed was quantitative design. Based on literature, impact of board diversity on financial performance can be assessed using either panel data or cross-sectional data. For example, Erhardt et al.(2003), Mahadeo et al.(2003) and Darmadi (2011) used a cross-sectional analysis whereas Campbell and Mínguez-Vera (2008), Carter et al.(2010), Garba and Abubakar (2014), Tarus and Aime (2014)used panel data. Cross-sectional analysis helps to show the impact of the effect of diversity on performance at a time. However, board diversity's impact on financial performance over time can be best assessed using panel data analysis. Since the interest of this research was to assess the impact of board heterogeneity on financial performance of commercial banks in Ethiopia, panel data analysis was assumed to be appropriate for this purpose. To capture the time effect of demographic diversity in the boardroom, therefore, 5 years panel data was used in this research. Other justification for the use of panel data were solving indigeneity problem in board composition (Carter et al., 2010) and provides better picture and eliminates heterogeneity problem (Gordini and Rancati, 2017; Campbell and Mínguez-Vera, 2008)

3.2. Conceptual frame work

Based on the literature review in chapter two, the following conceptual framework was developed. It gives an overview of the conceptual model of this research regarding the impact of gender, ethnicity, and age diversity on the financial performance of commercial banks.

Figure 1: conceptual framework



Source: author's compilation

3.3. Variable Measurement

3.3.1. Dependent Variables

The dependent variable of this research was the financial performance of a commercial banks in Ethiopia. Literature on the measurement of financial performance is not unanimous. Some use market-based measures like Tobin Q where as others prefer accounting-based measures such as ROA, ROE etc. Market-based measures serve as proxies for firm's ability to create value for shareholders since they focus on the future or long-term financial performance of firms (Campbell and Mínguez-Vera, 2008; Carter et al., 2010). However, accounting-based measures are used most commonly in literature even if they have limitations such as being sensitive to the accounting system in use; indictors of past and short-term performance etc. (Campbell and Minguez-Vera, 2008; Dale-olsen et al. 2013; Adams, 2015; Eulerich and Velte, 2014; Conyan and He, 2017; Gentry, 2010).

Some authors employed Tobin's Q to measure firm performance (Campbell and Minguez-Vera, 2008; Mazzotta, Bronzetti, and Baldini, 2017; Gordini and Rancati, 2013; Sarhan, Ntim, and Al-Najjar, 2018; Gentry, 2010; Garba and Abubakar, 2014). Other researchers employed return on assets(ROA) to measure firm performance (Erhardt et al., 2003; Mahadeo et al., 2012; Gordini

and Rancati, 2013; Sarhan, Ntim, and Al-Najjar, 2018). There has been also studies that have used ROE (Ararat, Aksu, and Tansel Cetin, 2015; Garba and Abubakar, 2014).

In line with these litrature, therfore, this research used ROA, the ratio of net income or profit to total assets, and ROE, the ration of net profit or income to total equity, as measures of bank's financial performance. Moreover, the use of Tobin Q was not possible since there is no stock market in Ethiopia.

3.3.2. Independent variables

The independent variables selected for this study are aspects of demographic diversity of boards in commercial banks in Ethiopia. Specifically, the independent variables were gender, ethnicity and age of BOD.

As gender is one of demographic variables that is studied frequently, there is an established mechanism for measuring it. Following from numerous research, therefore, gender diversity was measured by using the number or percentage of female director from the total board size (Liu, Wei, and Xie, 2014; Low, Roberts, and Whiting, 2015; Conyon and He, 2017; Chotiyaputta, 2018; Martín-ugedo and Minguez-vera, 2014; Marinova, Plantenga, and Remery, 2016; Dale-olsen et al., 2013; Mazzotta, Bronzetti, and Baldini, 2017; Adusei, Akomea, and Poku, 2017; Shehata, Salhin, and El-helaly, 2017).

Owing to the availability of limited research, the measurement of ethnic diversity is not that straight forward. One approach is considering ethnic diversity as a dummy variable. Ujunwa et al.(2012), for example, considered ethnic diversity as a dummy variable where a value of 1 is given to it if board consists of different ethnic groups and a value of 0 if board is from the same ethnic group. This approach is very general in that a board is considered diversified unless it is made up of entirely one ethnic group. Garba and Abubakar (2014) and Ogboi, Aderimiki, and Enilolobo (2018)followed the same approach but with a different criteria for assigning the value of 1 and 0 to ethnic diversity. Ethnic diversity was given a value of 1 if the board contains both Northerners […Hausa, Fulani etc. are the major ethnic groups in Northern Nigeria] and Southerners […Igbo, Yoruba, Ijaw etc. are the major ethnic groups in the South of Nigeria] and 0 otherwise. Both methods suffer from the problem of being specific to the context of Nigeria.

Using a slightly different approach, Hassan et al.(2017) used number of non-Malays […the major ethnic group that constitutes about 52% of the population in Malaysia] in the board as a measure of board ethnic diversity. Similarly, Marimuthu (2008) used the ratio of non-Malay to

total number of directors as a measure of ethnic diversity. This measurement is not only specific to Malaysia but also looks to apply where there is one dominant ethnic group. A given board is ethnically diverse if it contains the three major ethnic groups of Nigeria […Hausa/Fulani, Yoruba, and Igbo which constitute 29%, 21% and 19% of the Nigerian population (Omaye and Eriki, 2013).

Perhaps a different approach is to measure diversity using indexes such as Blau's index, Herfindahl-Hirschman Index, Shannon index(Cheong and Sinnakkannu, 2014; Gordini and Rancati, 2013; Campbell and Mínguez-Vera, 2008; Rivas, 2012; Mazzotta et al., 2017). These indices have originated from other discipline such as ecology to study biodiversity but latter adapted to measure board diversity. But Blau's Index of Heterogeneity is most commonly used to assess the level of ethnic diversity. This index is specified below.

Blau index

$$H = 1 - \sum_{1}^{4} P_i^2$$

Where, H is the measure of heterogeneity, P the percentage of directors in an ethnic category, and i the number of different categories represented in a firm. For example, the index would have a value of 0.50 when there are two groups and maximum heterogeneity, that is, 50% in each group. However, such indices are usually used to determine a combined diversity (Mazzotta et al., 2017; Campbell and Mínguez-Vera, 2008; Erhardt, Werbel, and Shrader, 2003) which was not the interest of this particular research. This research aimed at finding out the individual effect of gender, ethnicity and age on financial performance.

Based on the above literature, adopting any one of those method to measure ethnic diversity was considered a little inappropriate. Hence, it was necessary to modify the above measurement of ethnic diversity and make it more appropriate for the context of Ethiopia. Therefore, ethnic diversity was considered a dummy variable and assumed a value of 1 if the board a given bank has more than two ethnic groups in Ethiopia otherwise it would have the value of 0.

Like ethnic diversity, the measurement of age diversity differs among studies. Some studies classified director's age into age groups (e.g. Mahadeo et al., 2012), others use the standard deviation of age as a proxy, the average board members age, the Blau index (Darmadi, 2011) or the coefficient of variation (CV) of age (Talavera, Yin, and Zhang, 2018; Tarus and Aime, 2014; Ferrero-Ferrero, Fernández-Izquierdo, and Muñoz-Torres, 2015). Following the latter approach,

age diversity in this research was measured by the CV of age which is calculated as the standard deviation of a company's board age divided by the mean of its board age. The CV is especially useful as it does not rely on the variation caused by the absolute size of the board because the age deviation is presented relative to its own mean.

3.3.3. Control variables

As far as control variables are concerned, prior researches identify several control variables that might also affect the relationship of board demographic diversity and firm financial performance. Different studies have identified various control variables in their studies. For this research, an attempt was made to identify the most frequently used controls variables in diversity research among a wide spectrum of research. Hence, board size, firm size, firm age and leverage were the control variables for this research. (Erhardt et al., 2003; Mazzotta et al., 2017; Ujunwa, 2012; Campbell and Mínguez-Vera, 2008; Gordini and Rancati, 2013; Sarhan et al., 2018; Ogboi et al., 2018;Cheong and Sinnakkannu, 2014 Dale- Olsen et al., 2013; Hasan et al., 2014). Firm size is considered as a control variable since large firms most likely become complex in their operation and this complexity might call for diversity. The reasons for including board size as a control variable is larger boards are expected to be more diverse than smaller ones. Firm age signifies the experience and complexity of operations that will affect its performance. Highly leveraged firms will have low agency cost and inefficacy, hence affects performance.

Following from literature, therefore, board size was measured using total number of members in the board (Carter et al., 2010; Ujunwa, 2012; Garba and Abubakar, 2014; Marimuthu, 2008) whereas natural logarithms of book value of firm's total assets (Carter et al., 2010; Mazzotta et al., 2017; Ujunwa, 2012; Cheong and Sinnakkannu, 2014) was used to measure firm size. Again, consistent with literature, the ratio of total debt to total assets was used to measure leverage(Mazzotta et al., 2017; Ogboi et al., 2018) while the natural logarithms of number of years since establishment was used to measure age of the firm(Ujunwa, 2012; Rivas, 2012; Mazzotta et al., 2017)

The author found it convenient to summarize measurement issues in the table below.

Table 2: summary of variable measurement

Variables	Measurement
ROA	Return on Asset, the ratio of net profit to total assets
ROE	Return on equity, net income or profit divided by total equity
Gender diversity	The number or percentage of female directors in the board
Ethnic diversity	Dummy variable, where a value of 1 is assigned if a board contains more than two ethnic groups of Ethiopia and 0 otherwise
Age diversity	Coefficient of variation of the age of BOD
Board size	The number of directors in the board
Firm size	Natural logarithms of the book value of total assets
Leverage	Total debt divided by total assets
Firm age	Natural logarithms of the number of years since establishment

Source: author's compilation

3.4. Data collection

This research was based on census data since the number of commercial banks in Ethiopia are small. A census-based research is mostly justified when the population of interest is small and well defined. The population of this study, 17 commercial banks, strictly lies within the boundaries these requirements. There are currently 18 banks in Ethiopia but Development Bank of Ethiopia is excluded since its operation is considered not comparable with the rest of commercial banks. Thus, data was collected from 17 commercial banks in the country.

A combination of primary and secondary data was collected for this research. Data on financial statements of the commercial banks was collected from the banks' websites. However, this was substantiated by collecting financial statements that are not found in the website from head offices of the concerned banks. Accordingly, financial statement for a period of five years (2013/14 - 20117/18 E. C) were collected from all commercial banks in Ethiopia. The primary data, profile of board members of each bank- was collected by designing a checklist. Collection of the age, gender and ethnicity of the BOD of each bank was challenging. It also took very long time. However, the researcher employed different strategies - repeated visits to board offices; several explanations and convincing; use of proxy etc.- to overcome it. a repeated attempt to get the data from NBE has failed. It is believed that by using a multi-period instead of data from

only one year, the reliability of the results has increased and it allowed for better control over changes in diversity (Erhardt et al., 2003).

3.5. Model Specification and data analysis

In this research, an attempt was made to determine the effect of gender, ethnic and age diversity of boards on financial performance of commercial banks in Ethiopia. A distinct model for each aspect of demographic diversity would enable the researcher to test the impact of each diversity variable on the financial performance of banks on a separate regression analysis. Thus, the model for each aspect of demographic diversity is specified as follows.

Model for gender diversity

$ROA = \beta_0 + \beta_1 \text{Gender Diversity} + \beta_2$ Board size $+\beta_3 \log(\text{firm size}) + \beta_4$ Leverage $+\beta_5$ log (firm age) + ϵ

$ROE = \beta_0 + \beta_1 \text{Gender Diversity} + \beta_2$ Board size $+\beta_3 \log(\text{firm size}) + \beta_4$ Leverage $+\beta_5$ log (firm age) + ϵ

Model for ethnic diversity

$ROA = \beta_0 + \beta_1 \text{Ethnic Diversity} + \beta_2$ Board size $+\beta_3 \log(\text{firm size}) + \beta_4$ Leverage $+\beta_5$ log (firm age) + ϵ

$ROE = \beta_0 + \beta_1 \text{Ethnic Diversity} + \beta_2$ Board size $+\beta_3 \log(\text{firm size}) + \beta_4$ Leverage $+\beta_5$ log (firm age) + ϵ

Model for age diversity

$ROA = \beta_0 + \beta_1 \text{Age Diversity} + \beta_2$ Board size $+\beta_3 \log(\text{firm size}) + \beta_4$ Leverage $+\beta_5$ log (firm age) + ϵ

$ROE = \beta_0 + \beta_1 \text{Age Diversity} + \beta_2$ Board size $+\beta_3 \log(\text{firm size}) + \beta_4$ Leverage $+\beta_5$ log (firm age) + ϵ

The data so collected was analyzed with the help of Stata. The data was analyzed using descriptive statistics and random effect regression. First, descriptive statistics was produced to see the major features of the data set. Then, fixed effect (FE) regression was conducted to find out about the impact of each demographic variable (age, gender and ethnicity) on financial performance of banks measured using ROA and ROE. This test is chosen for various reasons.

First, based on the nature of date. Literature justifies the use fixed effect panel estimator the units of the study, i.e., banks are assumed to be heterogeneous. It is assumed that each bank has various properties that make it different from others. Moreover, fixed effect model was found to be appropriate after conducting Hausman test on the regression output. However, there are different suggestions on the use of fixed or random effect (RE) estimations (Bella et. al, 2018). Adams (2010), for example suggests that fixed effect model should be used to eliminate time-invariant heterogeneity in data. Other authors suggest the use of random effect model (Gordini and Rancati, 2013). Based on previous research, Hausman test was performed to choose between FE and RE model (Ujunwa et.al., 2012, Carter et.al., 2010). Using the Hausman test the null hypothesis that random effect model is appropriate is tested. The null hypothesis was rejected for all tests with less than 5% probability value (see appendix C for the details of Hausman test). Such tests, therefore, suggested that FE model is appropriate. Also, FE model analysis was used by many authors in examine the impact of gender, ethnic and age diversity on financial performance(Ujunwa et al., 2012;Tarus & Aime, 2014;Sabatier, 2015; Shehata et al., 2017; Ogboi et al., 2018; Ujunwa, 2012b; Ogboi et al., 2018; Adusei et al., 2017; Abubakar, 2017).

Chapter Four

Result and Discussion

4.1 Introduction

This chapter presents the results of the research. It is a quantitative research where the data was processed using the help of Stata software. The outcome of the study is presented in tables 3-9 accompanied by discussion for important issues relating to the variables studied. The next section briefly presents how data was examined, prepared and processed. Then, the descriptive statistics of the variables such as mean, standard deviation and range of variables are shown. This is followed by the presentation and discussion of the effects age, gender and ethnic diversity on financial performance. The impact of the independent variables on ROA and ROE are assessed using fixed effect regression analysis. To this end, separate regression for each aspect of demographic diversity is conducted and presented. The hypothesis developed are tested based on the results of fixed effect regression.

4.2 Data Examination and Preparation

Data collection was very challenging because of resistance from banks. All the seventeen commercial banks were covered in this study. Getting the banks to cooperate required several visits and explanations. It took three to five visits to all the commercial banks to obtain the data for this study. Moreover, explaining the objectives of the research, its methodology and measurement issues was necessary. This is one of the reasons why the study was not completed within the regular time and requesting extension period became mandatory.

The demographic data of members of BoDs of banks was collected using a checklist. The checklist was designed to collect information on age, gender and ethnicity of BoDs of all the seventeen banks. This checklist was distributed for office of board of directors of the banks. There was a resistance in providing information on ethnic background of members of BOD when the checklist was pilot tested on two banks. Thus, mother tongue or first language was used as a proxy for ethnic background. Moreover, religion and education were included as one mechanism for overcoming the resistance of banks, i.e., disguising ethnicity.

There was no missing data. Not only the author himself has collected the data but maximum effort was made to make sure the checklist is fully completed. These efforts include explaining how the checklist should be completed during distribution; checked for missing data during

collection, and to get it properly completed when missing values are discovered. The data about demographic features members of BoD of banks and data from financial statement information was entered in to excel. An appropriate format was adopted to help input the excel information in to Stata for analysis.

4.3 Descriptive Statistics

Table 3 below reports the descriptive statistic of the variables investigated. As age diversity is measured in terms CV of age, a closer look at the statistics indicates that banks boards show rather low age diversity with variation value of 0.0378. Accordingly, the average age variation among board members of banks in Ethiopia is found to be about 15.05%. This indicates that age of a given board member could be above or below the average age by about 15%. The dispersion in age of board members is about 3.78% with the minimum value of 9.06% and a maximum value of 32.1%.

As far as gender diversity is concerned, there is different degree of representation. There is varying level of women representation in boards. While some banks don't have female directors at all, others have a maximum representation where 63.64% of the board members are female. However, the mean value of nearly 17% shows that there is low level of women directors among commercial banks in Ethiopia. This means, on average, the number of women directors is less than two out of a minimum of 7 and a maximum of 13 BoDs during the study period. This is a clear indication that women are poorly represented in the boards of banks. It would be interesting to see this with respect to the difference in women representation among banks which stands at 15.6%.

In principle, Ethiopian corporate environment should reflect the multicultural nature of the country. Thus, studying ethnic diversity is justified from this general notion. Ethnic diversity is measured as a dummy variable where a board is considered ethnically diverse if more than two ethnic groups exist in it regardless of the board size. The mean value of ethnic diversity is about 64.7% which suggests that about 11 out of 17 banks are ethnically diverse. However, there is relatively large variation between banks as indicated by 48% standard deviation score.

Regarding measures of financial performance, ROA and ROE are used as proxies of financial performance. They are both accounting based measures of financial performance. Moreover,

ROE is used in addition to ROA to make the models more robust. ROA indicates that the average return on investment of banks in the country is about 2.55% of their investment in assets. Thus, efficiency of banks in Ethiopia in generating profits from their given assets is 0.026 cents per birr 1 investment in assets. Moreover, the difference in efficiency between banks is generally low as indicated by 0.5% standard variation. However, the range of efficiency between banks varies between 1.28% for least efficient one and 4.7% for the most efficient bank. The ROE tells a different story. ROE measure rate of return on resources obtained from equity investors. Whereas the mean return on equity is 20%, the standard deviation stands at 11.11%. This implies during the study period, on average banks were able to generate a profit of 0.20 cents per 1 Birr equity investment. The value of ROE ranges from a minimum of 6.6% to a maximum of 65.8%. This implies there is a great difference among banks financial performance in terms of return on equity.

During the study period, the average board size of banks in Ethiopia as about 10 members and standard deviation of about 4%. The number of board members range between 7 and 13. By the nature of their business banks are highly leveraged firms. The descriptive statistics clearly depicts this idea where the mean leverage is about 85%. Financial leverage among banks has a minimum value of 74% and a maximum value of 95%.

Table 3: Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
AD	85	.1505647	.0378241	.0906	.321
GD	85	.1696188	.1560928	0	.6364
ED	85	.6470588	.4807207	0	1
ROA	85	.025552	.0059845	.0128506	.0470345
ROE	85	.2002701	.111166	.0660264	.6589329
BS	85	10.45882	1.484467	7	13
FL	85	.8548504	.0451522	.740482	.95908
lnFS	85	23.12426	1.260224	20.68614	26.91619
lnFA	85	2.286852	.565322	.6931472	3.850147

where

AD- age diversity.

GD- gender diversity.

ED- ethnic diversity.

ROA- return on asset.

ROE- return on equity.

BS- board size

FL- financial leverage

lnFS- natural logarithm of firm size

lnFA- natural logarithm of firm age

4.4 Regression Analysis

Regression analysis was carried out to determine the impact of age, gender and ethnic diversity on ROA and ROE and to test the hypothesis formulated. The results of the regression are presented and discussed below.

4.4.1 Gender diversity

This study set out to determine if gender diversity of banks boards has an impact on financial performance. Gender was focused upon since it is arguably the most debated issue, not only in terms of board diversity, but also in terms of female participation in economic activity and in society in general. Gender diversity was measured in terms of percentage of women directors from total board. Tables 4 and 5 presents the regression result of gender diversity. As shown in table 4 below, the fixed effect regression result indicates that gender diversity doesn't affect financial performance. With a p-value of 0.635 which is well beyond 5%, gender diversity is found to be not significant in affecting ROA. The evidence suggests that percentage of women in

boards of banks didn't affect the financial performance of banks. This implies that gender diversity in directors of banks is found to have no effect on financial performance. Thus, the hypothesis that gender diversity affects financial performance is not supported by the empirical evidence of this study.

Table 4: regression result for Gender diversity and ROA

```
Fixed-effects (within) regression               Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.3172                                         min =          5
     between = 0.2658                                         avg =        5.0
     overall = 0.2106                                         max =          5
F(5,63)           =       5.85
corr(u_i, Xb)  = -0.7439                        Prob > F          =     0.0002
------------------------------------------------------------------------------
         ROA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          GD |   .0053055   .0111124     0.48   0.635    -.0169008    .0275118
          BS |  -.0000756    .000902    -0.08   0.933     -.001878    .0017268
          FL |  -.2010139   .0518814    -3.87   0.000    -.3046905   -.0973372
        lnFS |   -.003858    .003324    -1.16   0.250    -.0105005    .0027844
        lnFA |   .0167251   .0071737     2.33   0.023     .0023896    .0310607
       _cons |   .2482457   .0532297     4.66   0.000     .1418746    .3546168
-------------+----------------------------------------------------------------
      sigma_u|  .00507097
      sigma_e|  .00480738
         rho |  .52666489   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(16, 63) = 1.52                     Prob > F = 0.1217
where
AD- age diversity                   FL- financial leverage
BS- board size                      lnFA- natural logarithm of firm age
ROA- return on asset.               lnFS- natural logarithm of firm size
```

A similar result is obtained when financial performance is measured using ROE as indicated in table 5. The p-value obtained in the analysis is very high (P-value =0.962) that gender diversity is not related to ROE. In terms of both ROA and ROE, gender diversity is found to hardly influence financial performance of banks. The result is not surprising as previous empirical evidence on the effect of gender diversity on firm performance inconclusive.

The result obtained is consistent with the findings of Carter et al. (2010), Dale-olsen et al. (2013), Mazzotta, Bronzetti, and Baldini (2017) and Marinova, Plantenga, and Remery (2016). Like the current study, all these past studies couldn't support the business case for gender diversity, i.e., the existence of female directors has a positive impact on financial performance of firms. One plausible explanation to this would be the way women are selected or elected in to the

board. Women could only make meaningful contribution to the financial performance of firms if they are selected based on competency. But if their inclusion if for reasons like merely meeting legal requirement, to appeal to investors etc. female board members will not have any influence on financial performance. Another explanation could be the proportion of women directors is low that they are dominated by male members. Hence, they are not able to influence the financial outcome. Since Ethiopia currently has no law regarding the representation of women, thus, the more reasonable explanation to the finding of this study are low representation of women and election without competence. The average percentage of women in the boards of banks is about 17% which is low, i.e., less than two women directors. Moreover, the possibility that effect of gender of board may differ in different circumstances and at different times could explain this result. For example, the way gender roles are perceived in different societies is different and shaped by religion, level of growth and education, culture etc. In addition, the understanding of the role of women in the society does not remain the same over a reasonably longer time. Understandably, gender has been an important agenda of the Ethiopian society and women are playing important roles in the economy, politics and social affairs of the society.

Table 5: regression result for Gender diversity and ROE

```
Fixed-effects (within) regression               Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17

R-sq:                                           Obs per group:
     within  = 0.0793                                         min =          5
     between = 0.5708                                         avg =        5.0
     overall = 0.4977                                         max =          5

F(5,63)           =       1.09
corr(u_i, Xb)  = 0.6038                         Prob > F          =     0.00377

------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          GD |   .0035699   .0754035     0.05   0.962     -.147112    .1542517
          BS |   .0014945   .0061203     0.24   0.808     -.010736    .0137251
          FL |  -.0459697   .3520434    -0.13   0.897    -.7494723    .6575328
        lnFS|  -.0196838    .022555    -0.87   0.386    -.0647564    .0253888
        lnFA |   .0831288   .0486776     1.71   0.093    -.0141457    .1804033
       _cons |   .4884006   .3611926     1.35   0.181    -.2333853    1.210186
-------------+----------------------------------------------------------------
      sigma_u|  .09454171
      sigma_e|  .03262067
         rho |  .89361307   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(16, 63) = 18.53                     Prob > F = 0.0000
```

where

AD- age diversity

BS- board size

ROE- return on equity

lnFA- natural logarithm of firm age

FL- financial leverage

lnFS- natural logarithm of firm size

However, the result is not consistent with pervious findings that established either positive or negative relation between Gender diversity and financial performance. Low, Roberts, and Whiting (2015), Carter et al. (2003), Liu, Wei, and Xie (2014), Gordini and Rancati, (2017), Chotiyaputta & Yoon (2018) etc have found positive relationship between representation of women in board room and financial performance. These authors provided gender related difference, wider range of perspectives, improved problem solving, better understanding of the market etc. as explanations for the positive relation. On the other hand, Adams and Ferreira (2009), Adusei, Akomea, and Poku (2017), Ujunwa et al., (2012b)and , Shehata, Salhin, and El-helaly (2017) established a negative link between gender diversity in the boardroom and financial performance. The argument is more gender diverse boards devote more effort to monitoring managers that could probably hurt financial performance.

The theoretical basis for this study were agency theory, resource dependency theory, human capital theory and upper echelon theory. Although their respective explanation varies, as discussed in detail in the theoretical literature section, these theories suggest that demographic diversity has some impact on financial performance of firms. Specifically, elements of demographic diversity such as gender, ethnicity and age may have negative, neutral or positive effect on financial performance. However, the empirical evidence from commercial banks in Ethiopia and the subsequent analysis supports only the no effect proposition of the theories. Thus, there is a theoretical support for the assertion of empirical evidence that gender diversity has no impact on financial performance of banks in Ethiopia.

Four variables- board size, firm size, firm age and financial leverage- have been used as control variables in this study. The regression output in table 4 above indicates that the only significant control variable is financial leverage (p-value=0.00). Specifically, financial leverage has a negative impact on firm performance as measured by ROA. The rest of the control variables are found to have no impact on financial performance. Referring to table 5 above, all the control variables are found to be insignificant in affecting ROE as all of them have a p-value of more than 5%.

4.4.2 Ethnic diversity

Multicultural societies should reflect their diversity in the political, economic and social life of the people. Corporation in such nations should embrace cultural differences and incorporate its ideals into the corporate governance (Cheong and Sinnakkannu , 2014). Ethiopia falls in the category of nations that are diversified and multicultural. In this regard, ethnic dimension of board diversity was studied with the belief that it is important and very relevant to the country. In this study, ethnic heterogeneity was measured a dummy variable where a board with more than two ethnic groups will have a value of 1 otherwise zero. The result of fixed effect regression for ethnic diversity is presented in table 6 and 7 below. Based on the result in table 6, ethnic diversity has a p-value of 0.634 which is more than 5%. One possible explanation to this result could be the ethnic diversity in banks may not be large enough to have influence on financial performance. The implication is that ethnic diversity is not significant in predicting financial performance in terms of ROA. Thus, based on this empirical evidence, it is possible to conclude that ethnic diversity strategies cannot be pursued for economic reason. This implies that a firm should not go for ethnic diversity for achieving higher level of profit than otherwise would be possible. Moreover, the result on table 7, indicates a similar result that ethnic diversity doesn't impact ROE. A p-value of 0.638 clearly suggest that ethnic diversity doesn't affect financial performance of banks in Ethiopia. The result of the impact of ethnic diversity on financial performance in terms of both ROA and ROE is similar, i.e., the findings of this research suggest that the level of ethnic diversity in the BoD of banks in Ethiopia has no influence on a firm's book measure of financial performance. Hence, the hypothesis that ethnic diversity of BOD has an influence on firm financial performance is not supported by the empirical evidence in this study. One possible explanation to this result could be the ethnic diversity in banks may not be large enough to have influence on financial performance. Ethnic diversity in this research is measured as a dummy variable where it will have a value of 1 if a board contains more than two different ethnic groups. It, thus, doesn't tell the degree of diversity in each board. This was done for practical reasons as data on ethnicity of board members is difficult to find. For this research, first language or mother tongue is used as a proxy of ethnicity.

However, the findings should be understood with a little precaution for several reasons. First, ethnic diversity studies are very rare and mostly confined in Africa and Asia. When ethnic diversity is studied in the first world, it is often about the representation of ethnic minorities.

Moreover, there is use of different method in measuring diversity. Therefore, most of the findings are often scanty. Regardless of this, the findings of this research is consistent with the that of Hassan et al.(2018) and Carter et al.(2010). By using the number of non-Malays as a measurement for ethnic diversity, Hassan et al.(2018) in their study in Malaysia reported that ethnic diversity has no impact on firm performance. Moreover, Carter et al. (2010) examined in the inclusion of ethnic minority directors on the board for a sample of major US corporations. Their study of the relationship between the number of ethnic minority directors on the board and financial performance led to a conclusion that there no significant relationship between ethnic diversity of the board and financial performance measured as ROA and Tobin Q (Carter et al. 2010).

Table 6: regression result for ethnic diversity and ROA

```
Fixed-effects (within) regression               Number of obs      =        85
Group variable: Bank1                           Number of groups   =        17

R-sq:                                           Obs per group:
     within  = 0.3172                                         min =         5
     between = 0.2379                                         avg =       5.0
     overall = 0.1918                                         max =         5

F(5,63)           =       5.85
corr(u_i, Xb)  = -0.7720                        Prob > F           =    0.0002

------------------------------------------------------------------------------
         ROA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          ED |   .0015966   .0033367     0.48   0.634    -.0050712    .0082644
          BS |   .0000192   .0009093     0.02   0.983    -.0017979    .0018363
          FL |  -.1995678   .0511901    -3.90   0.000     -.301863   -.0972725
        lnFS|  -.0041107   .0033086    -1.24   0.219    -.0107225    .0025011
       lnFA |   .0170487   .0071257     2.39   0.020     .0028092    .0312882
       _cons |    .250988   .0539276     4.65   0.000     .1432223    .3587536
-------------+----------------------------------------------------------------
      sigma_u|  .00549369
      sigma_e|  .00480734
         rho |  .56633524   (fraction of variance due to u_i)
------ ----------------------------------------------------------------------
F test that all u_i=0: F(16, 63) = 1.40                     Prob > F = 0.1688
```

Where

ED- Ethnic diversity

ROA- return on asset

BS- board size

FL- financial leverage

lnFA- natural logarithm of firm age

lnFS- natural logarithm of firm size

Nonetheless, there are also studies that have established some relationship between ethnic diversity and financial performance- positive and negative. Ujunwa, Nwakoby, and Ugbam (2012), for example, found that financial performance positively predicted by board ethnic diversity when they study quoted Nigerian firms. The explanation provided by these authors draws on resource-based theory. Accordingly, Ethnic diversity improves firm performance by way of enhancing access to different external resources even though it might increase board size. Based on the study quoted deposit money banks in Nigeria and using Tobin Q as performance indicators, Ogboi, Aderimiki and Enilolobo (2018) reported significance positive relationship between ethnic diversity and firm performance. Their explanation is based on the assertion of Human Capital Theory, i.e., BOD with different knowledge, skills, competences and other attributes embodied in individuals that are relevant to economic activity provide unique human capital that can be used to influence the outcome of the firm. Ethnically diverse boards will have wide range of perspectives to handle issues. Another research in Malaysia by Cheong and Sinnakkannu (2014) using Herfindahl-Hirschman Index to measure ethnic diversity (ethnicity is the largest representation of a single race) found a significant positive relationship between ethnic diversity and firm financial performance. On the other hand, a study by Omaye and Eriki (2013) found that the presence of three major ethnic groups in Nigeria is negatively associated with firm performance. They used ratio of the three major tribes to the total board size as a proxy for board ethnic diversity.

Perhaps the difference in the findings of all these researches can be attributed to the difference in measurement of the variables, the methodology used and mostly in the context each study has been carried out. Ethnic diversity has been measured in different ways. The number of non-Malays; inclusion of ethnic minorities; ethnic diversity as a dummy variable; the presence of major ethnic groups and use of index are just to mention some. Likewise, the methodology differs from one study to the other. The context in which ethnic diversity has been studied is another important consideration. Based on the studies cited here, it is possible to conclude that the context of USA is very different from that of Nigeria and that of Nigeria is not the same us Malaysia. Obviously, one can reasonably expect differences in terms the number of ethnic groups; their composition; the existence of dominant or minority ethnic groups among these countries. Ethiopia has its own unique features that make it different from all the above-mentioned countries. As opposed to those countries, absence of stock market, it can be argued, is

one difference that should be considered. Potential investors have little chance of incorporating for such as ethnic diversity in their evaluation before buying a stock. Therefore, the context of each country might have a bearing on the results of ethnic diversity studies.

As presented in table 6 and 7, the four control variables have a greater than 5% p-value. This result is consistent on both measures of financial performance- ROA and ROE. Thus, financial leverage, firm size, firm age and board size are found to have no effect on financial performance of banks in Ethiopia. This result is inconsistent with most literature. Inclusion of control variables in research is justified in terms of those variables not covered in the research have impact on the dependent variable.

Table 7: regression result for ethnic diversity and ROE

```
Fixed-effects (within) regression               Number of obs      =        85
Group variable: Bank1                           Number of groups   =        17

R-sq:                                           Obs per group:
     within  = 0.0825                                         min =         5
     between = 0.5040                                         avg =       5.0
     overall = 0.4364                                         max =         5

F(5,63)           =       1.13
corr(u_i, Xb)  = 0.5491                         Prob > F           =    0.0052

------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          ED |   .0106838   .0226016     0.47   0.638     -.034482    .0558495
          BS |   .0019406   .0061595     0.32   0.754    -.0103681    .0142494
          FL |  -.0742096   .3467473    -0.21   0.831    -.7671289    .6187097
         lnFS|  -.0203386   .0224117    -0.91   0.368    -.0651249    .0244476
        lnFA |    .082865   .0482673     1.72   0.091    -.0135894    .1793195
       _cons |   .5173141   .3652902     1.42   0.162    -.2126602    1.247288
-------------+----------------------------------------------------------------
     sigma_u |   .0963006
      sigma_e|  .03256355
         rho |  .89739063   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(16, 63) = 18.24                     Prob > F = 0.0000
```

Where

ED- Ethnic diversity

ROE- return on equity.

BS- board size

FL- financial leverage

lnFA- natural logarithm of firm age

lnFS- natural logarithm of firm size

4.2.3 Age diversity

Age is another important dimension of demographic diversity studied in to attempt to learn about the optimal board composition. BoDs from different generations are more likely to hold heterogeneous values that can potentially impact the financial performance of firms in some way. A separate regression to find out about the impact of age diversity on financial performance of banks was carried out. The result is shown in Table 8 and 9 below. The result in table 8 indicates that age diversity (p-value of 0.868) has no effect on financial performance of banks measured in terms of ROA. This result is found after controlling the impact of board size, financial leverage, firm size and firm age. Financial leverage and firm age are the only variables that are found to be significant variables.

This empirical evidence is not in line with existing theoretical literature. Existing theoretical literature suggests that age diversity may have positive or negative effects on bank profitability. On the one hand, age diversity may improve the experiences, resources, knowledge, and networks of the board, which in turn improve bank profitability. On the other hand, age diversity may suffer from cognitive conflicts and lower group cohesion, which harm bank profitability. The existing research on board age diversity so far provided mixed evidence. Some studies show that age diverse boards lead to improved firm financial performance (Ararat et al., 2010; Kim & Lim, 2010; Mahadeo et al., 2012), while others find that age diversity weakens firm profitability (Tarus & Aime, 2014). Given that age diversity may have both positive and negative effects on profitability, a non-directional hypothesis was developed. However, the empirical evidence seems to suggest that age diversity is not relevant in explaining financial performance. Therefore, the result of this study doesn't support the hypothesis that age diversity of BOD impacts financial performance of banks.

Table 8: regression result for age diversity and ROA

```
Fixed-effects (within) regression               Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.3150                                         min =          5
     between = 0.3041                                         avg =        5.0
     overall = 0.2275                                         max =          5
F(5,63)           =       5.79
corr(u_i, Xb)  = -0.7365                        Prob > F          =     0.0002
------------------------------------------------------------------------------
         ROA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          AD |   .0039806   .0238378     0.17   0.868    -.0436555    .0516167
          BS |   .0000759   .0011534     0.07   0.948    -.0022289    .0023807
          FL |  -.1938487   .0505216    -3.84   0.000    -.2948081   -.0928893
        lnFS|  -.0040378   .0033099    -1.22   0.227    -.0106522    .0025765
       lnFA |   .0170009   .0071759     2.37   0.021     .0026609    .0313409
       _cons |    .244364   .0546904     4.47   0.000     .1350741     .353654
-------------+----------------------------------------------------------------
     sigma_u|  .00485664
     sigma_e |    .004815
         rho |  .50430521   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(16, 63) = 1.59                     Prob > F = 0.0971
```

Where

AD- age diversity **FL**- financial leverage

ROA- return on asset **lnFA**- natural logarithm of firm age

BS- board size **lnFS**- natural logarithm of firm size

Moreover, ROE is also used as a proxy for financial performance and the regression to assess the impact of age diversity on ROE is presented in table 9 below. Again, age diversity is found to not significantly impact ROE (p-value=0.999). Therefore, model specified for ROE fails to support the hypothesis that firm performance is impacted by age. This result is not consistent with empirical literature. Significant negative association between age diversity and ROA and ROE was established by Talavera, Yin, and Zhang (2018) where the costs of board age diversity outweigh the benefits is given as justification. According to theses authors, age diversity lessens the cohesion in the boardroom and leads to barriers such as difficult communications, and generates conflicts. Such conflicts can protract the decision-making process and weaken the effectiveness of the board. When the effects of conflicts in board communication, cooperation, and decision- making processes outweigh the benefits of providing comprehensive perspectives and different external information by directors at different ages, the role of the board as a monitor and advisor will be impeded. As a result, an insufficient board may subsequently weaken the bank's profitability. Similarly, Eulerich and Velte (2017) reported negative link

between age diversity and firm performance. For these authors, age diversity is a double edge sword. On one hand it can be source of competitive advanatage as wide range of prespective from different age groups helps to improve decision making. On the other hand, it can lead to complex decision making process by reducing communication among the memebres. Positive relationship between age diversity and firm performance is reported by Mori (2014) and Ferrero-Ferrero et al. (2015). The positive impact in the findings of Mori (2014) is justified with a simple logic that with older age directors tend to have enriched backgrounds, skills, experience, and social networks. The experience of board directors helps them to monitor well and provide hence they would positively impact firm performance. Ferrero-Ferrero et al. (2015) are of the opinion that BoDs whose members draw from different generations in a balanced way can translate greater information richness within the board. For instance, whereas the older group can provide experience and wisdom, the middle group carries the major positions of active responsibilities in corporations and in society, and the younger group has the energy and plan for the future. For example, career concerns dominate younger managers as a result they may be more risk-averse since they face more uncertainty about their future career than their older counterparts while older managers are not afraid of career concerns due to their cumulative human capital. At the board level, age diversity may impact the process and the quality of decision marking. It may result in more board scrutiny and lead to less extreme outcomes (i.e., lower risk). However, age diversity may cause conflicts and make it difficult to reach a consensus. The extended decision-making process may expose banks to higher risk when it could not adjust their policy in time.

However, the result of this study can be accepted with confidence since extant literature has not yet settled. There is a room for such result. Moreover, the use of panel data in study which, in principle, will facilitate a more reliable picture is another reason for confidently accepting the result citrus paribus.

Table 9: regression result for age diversity and ROE

```
Fixed-effects (within) regression               Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.0793                                         min =          5
     between = 0.5665                                         avg =        5.0
     overall = 0.4963                                         max =          5
F(5,63)           =       1.08
corr(u_i, Xb)  = 0.5991                         Prob > F          =     0.0037

------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          AD |   .0001158   .1614993     0.00   0.999    -.3226149    .3228465
          BS |   .0015191    .007814     0.19   0.846    -.0140959     .017134
          FL |  -.0417058     .34228    -0.12   0.903    -.7256977    .6422862
        lnFS|  -.0197998   .0224245    -0.88   0.381    -.0646117     .025012
        lnFA |   .0833966   .0486165     1.72   0.091    -.0137557    .1805489
       _cons |   .4871579   .3705229     1.31   0.193    -.2532731    1.227589
-------------+----------------------------------------------------------------
      sigma_u|  .09428099
      sigma_e|  .03262125
         rho |  .89308345   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(16, 63) = 18.39                     Prob > F = 0.0000
```

Where

AD- age diversity

ROE- return on equity

BS- board size

FL- financial leverage

lnFA- natural logarithm of firm age

lnFS- natural logarithm of firm size

Chapter Five

Findings and their Implications

5.1. Introduction

This chapter presents the results of the empirical analysis presented and discussed in the previous chapter. It summarizes the output of the data analysis, and present the conclusion drawn by the author based on empirical findings and analysis. This study attempted to assess the effect of demographic diversity- age, gender and ethnicity- on financial performance of banks in Ethiopia in terms ROA and ROE. The findings of this study and their implications are presented below.

5.2. Summary

This study attempted to determine about the impact of gender, ethnic and age diversity on financial performance of commercial banks in Ethiopia over 5 years period (2006-2010 E.C or 2013/14-2017/18 G.C). Theoretical foundations suggest that demographic diversity may have an impact on financial performance of firms. Diversity may enhance or hamper effectiveness in the oversight function of boards of directors there by influencing financial performance. Previous empirical studies on aspects of demographic diversity are inconclusive, thus, three non-directional hypotheses were developed based on empirical literature. The independent variable for this research were age, gender and ethnic diversity whereas the dependent variable was financial performance measured in terms of ROA and ROE. Whereas age diversity was measured using CV of age, gender diversity was measured using percentage of women directors from the total board size. Ethnic diversity was measured as dummy variable where a board consisting of more than two ethnic groups was given a value of 1 otherwise zero. It is a census study where data on demographic features of board of directors of all 17 commercial banks in the country was collected using a checklist. Moreover, financial statements for the study period were collected from banks websites and the banks themselves. The data so collected was prepared in excel to allow for processing it in Stata software. Fixed effect regression was applied to determine the impact of age, gender and ethnic diversity on financial performance of banks.

5.3. Conclusions

This research had three research questions namely what is the effect gender of diversity on the financial performance of firms; does ethnic diversity impact firm's financial performance; does age heterogeneity affect financial performance of firms? Based on the analysis of data and the discussions following it, the following conclusions are drawn.

- The fixed effect regression result indicates that gender diversity is not a significant variable to predict financial performance of Ethiopian banks, i.e., the proportion of women from the total board is found to have no effect firm financial performance, as measured by ROA and ROE. Thus, hypothesis that gender diversity affects financial performance is not supported by the empirical evidence from commercial banks.
- Ethnic diversity has neither positive nor negative influence on financial performance of banks. The result of the regression done to assess its impact on financial performance in terms of both ROA and ROE revealed that it has no impact. Hence, the hypothesis that ethnic diversity of BOD has an influence on firm financial performance is not supported by the empirical evidence in this study. In other words, the evidence suggests that pursuing ethnic diversity has no any economic benefit.
- Again, the economic justification for age diversity doesn't hold true based on the empirical evidence. what the evidence suggest is that the existence of diversity in terms of age in the BOD doesn't affect ROA as well as ROE. Another way of saying it would be age diversity is found to neither contribute nor harm board effectiveness and there by the profitability of the firm, i.e., financial performance of a firm is not affected based on whether the members of BOD are draw from different generations or not.
- Based on the above conclusion, it is possible to deduce that demographic diversity in terms of age, gender and ethnicity found to neither contribute nor harm board the profitability of banks. Thus, it is possible to conclude that the findings of this research don't support the proponents of demographic diversity on economic grounds.

5.4. Recommendations

As the debate over whether firms should make board diversity a priority continues to grow in significance, an understanding of its effects on firm financial becomes increasingly relevant. This study explored the existence of a business case for board demographic diversity by analyzing the effect of board age, gender and ethnic diversity on a banks' ROA and ROE. Thus, it represents an addition to the exiting body of board diversity literature by providing empirical evidence form the third world since previous research on demographic diversity reveals mixed result and focus mostly on developed nation. This is particularly important since diversity research in a way could depend on national and cultural contexts. This empirical evidence from Ethiopia, therefore, address the gap in literature from sub-Saharan Africa. The findings complement prior studies on

the impact of board diversity on financial performance of firms which is largely inconclusive. It amounts to enriching the exiting empirical literature. Moreover, it provides the foundation for future studies on age, gender and ethnic diversity issues in Ethiopia.

There are also insights that this research provides from practical level. Particularly, the gender, age and ethnic diversity initiatives in Ethiopian banks should not be justified from on the grounds of financial gain. Such programs should be based on other justification than the contribution of demographic diversity to profitability. For example, representation of women in banks boards could be rationalized on ethical reasons. The ethical perspective that argues about the desirability of gender from the grounds of creating a just and equitable society. Moreover, egalitarian perspective justification for board diversity has ethical objective and does not presuppose connection to firm performance. Based on these perspectives, excluding some groups of the society such as women, age groups, ethnic groups, religious groups etc. is considered unjust, equitable and not sustainable. Additionally, gender diversity should be considered as one mechanism for improving the access to power for women who have historically been excluded from positions of power.

Again, board ethnic diversity should be justified from other perspective other that its potential contribution to profitability of the firm. For instance, ethnic diversity could be rationalized from the government's objective of creating one economic community and a strong and stable nation where diversity is entertained, i.e., unity in diversity. Multicultural societies should reflect their diversity in the political, economic and social life of the people. Corporation in such nations should embrace cultural differences and incorporate its ideals into the corporate governance. Ethiopia is a diverse and multicultural nation where corporate governance should reflect this diversity in some way even if it doesn't contribute to profitability. The same justification can be made for age diversity. In general, initiative to improve CG of banks in Ethiopia with the objective of enhancing oversight effectiveness and there by profitability should not consider age, gender and ethnic diversity as an important variable at least for economic reasons.

However, further research to enhance understanding of the issues of is recommended for several reasons. First, this research is entirely based on the banking industry. Thus, researching other industries or a mix of firms from different industries could further improve the understanding of impact of diversity on financial performance. Second, further research to uncover the reasons behind why age, ethnic and gender diversity could be a good idea. Third, exploring the issues by

using date for longer period could still be wise. Finally, it would be interesting to research the impact of different level or degree of age, ethnic and gender diversity on financial performance. The current study was limited to exploring the impact of general diversity on financial performance.

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Appendices

Appendix A. Check list for collecting demographic profile of board members

_____Bank

Demographic information of BOD

Year	Board members	Age	Gender	Language (mother tongue)	Education	Religion
2013/14 (2006 E.C)	Board member1(chairman)					
	Board member 2					
	Board member 3					
	Board member 4					
	Board member 5					
	Board member 6					
	Board member 7					
	Board member 8					
	Board member 9					
	Board member 10					
	Board member 11					
	Board member 12					
	Board member 13					
2014/15 (2007 E.C)	Board member1(chairman)					
	Board member 2					
	Board member 3					
	Board member 4					
	Board member 5					
	Board member 6					
	Board member 7					
	Board member 8					
	Board member 9					
	Board member 10					
	Board member 11					
	Board member 12					
	Board member 13					
	Board member1(chairman)					
	Board member 2					

2015/16 (2008 E.C)	Board member 3					
	Board member 4					
	Board member 5					
	Board member 6					
	Board member 7					
	Board member 8					
	Board member 9					
	Board member 10					
	Board member 11					
	Board member 12					
	Board member 13					
2016/17 (2009 E.C)	Board member1(chairman)					
	Board member 2					
	Board member 3					
	Board member 4					
	Board member 5					
	Board member 6					
	Board member 7					
	Board member 8					
	Board member 9					
	Board member 10					
	Board member 11					
	Board member 12					
	Board member 13					
2017/18 (2010 E.C)	Board member1(chairman)					
	Board member 2					
	Board member 3					
	Board member 4					
	Board member 5					
	Board member 6					
	Board member 7					
	Board member 8					
	Board member 9					
	Board member 10					
	Board member 11					
	Board member 12					
	Board member 13					

Appendix B. details of the descriptive statistics

Age Diversity

Percentiles	Smallest			
1%	.0906	.0906		
5%	.1087	.1012		
10%	.111	.1031	Obs	85
25%	.1236	.107	Sum of Wgt.	85
50%	.1462		Mean	.1505647
Largest		Std. Dev.	.0378241	
75%	.1643	.2315		
90%	.2061	.2331	Variance	.0014307
95%	.222	.2383	Skewness	1.536758
99%	.321	.321	Kurtosis	6.778778

Gender Diversity

Percentiles	Smallest			
1%	0	0		
5%	0	0		
10%	0	0	Obs	85
25%	0	0	Sum of Wgt.	85
50%	.1667		Mean	.1696188
Largest		Std. Dev.	.1560928	
75%	.2222	.6364		
90%	.3333	.6364	Variance	.024365
95%	.6	.6364	Skewness	1.295333
99%	.6364	.6364	Kurtosis	5.053973

Ethnic Diversity

Percentiles	Smallest			
1%	0	0		
5%	0	0		
10%	0	0	Obs	85
25%	0	0	Sum of Wgt.	85

50%	1		Mean	.6470588
Largest	Std. Dev.	.4807207		
75%	1	1		
90%	1	1	Variance	.2310924
95%	1	1	Skewness	-.6154575
99%	1	1	Kurtosis	1.378788

Return on Asset

Percentiles	Smallest			
1%	.0128506	.0128506		
5%	.0178981	.0150382		
10%	.0190804	.0176574	Obs	85
25%	.022043	.0178137	Sum of Wgt.	85
50%	.0242985		Mean	.025552
Largest	Std. Dev.	.0059845		
75%	.0273861	.0388115		
90%	.0326127	.0397255	Variance	.0000358
95%	.0353639	.0468073	Skewness	1.23063
99%	.0470345	.0470345	Kurtosis	5.587428

Return on Equity

Percentiles	Smallest			
1%	.0660264	.0660264		
5%	.1134406	.0785659		
10%	.1217717	.0992586	Obs	85
25%	.1525258	.1078869	Sum of Wgt.	85
50%	.1757631		Mean	.2002701
Largest	Std. Dev.	.111166		
75%	.2025838	.5798892		
90%	.2613619	.5883754	Variance	.0123579
95%	.5695801	.6216103	Skewness	2.845586
99%	.6589329	.6589329	Kurtosis	11.01361

Appendix C: Hausman Test result

Hausman test result for Age diversity and ROA

```
hausmanfe .

                ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          S.E.
-------------+----------------------------------------------------------------
          AD |    .0039806     .0157148       -.0117342        .0179039
          BS |    .0000759     .0007167       -.0006408        .0010815
          FL |   -.1938487    -.0618152       -.1320335        .0436797
        lnFS |   -.0040378    -.0051621        .0011242        .0028966
        lnFA |    .0170009     .0150719         .001929        .0063975
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg
    Test:  Ho:  difference in coefficients not systematic
                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       13.59
                Prob>chi2 =      0.0185
```

Hausman test result for Age diversity and ROE

```
            ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          S.E.
-------------+----------------------------------------------------------------
          AD |    .0001158    -.0678305        .0679463        .0490243
          BS |    .0015191    -.0031371        .0046562        .0043324
          FL |   -.0417058     .2766338       -.3183396        .1178949
        lnFS |   -.0197998    -.0240456        .0042458        .0066043
        lnFA |    .0833966     .1165968       -.0332002        .0180846
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg
    Test:  Ho:  difference in coefficients not systematic
```

```
                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       94.96
                Prob>chi2 =      0.0000
                (V_b-V_B is not positive definite)
```

Hausman test result for Gender diversity and ROA

```
hausmanfe .
                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          S.E.
-------------+----------------------------------------------------------------
          GD |    .0053055     .0071217       -.0018162        .0101057
          BS |   -.0000756     .0006343       -.0007099        .0008162
          FL |   -.2010139    -.0670735       -.1339404        .0458441
        lnFS |    -.003858    -.0063116        .0024536        .0028632
        lnFA |    .0167251     .0184807       -.0017556        .0060557
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg
    Test:  Ho:  difference in coefficients not systematic
                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       14.62
                Prob>chi2 =      0.0121
```

Hausman test result for Gender diversity and ROE.

```
hausmanfe .
                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          S.E.
-------------+----------------------------------------------------------------
          GD |    .0035699    -.0459053        .0494752        .0387682
          BS |    .0014945    -.0009993        .0024938        .0024724
          FL |   -.0459697     .3223536       -.3683233        .1543504
        lnFS |   -.0196838    -.0234518         .003768        .0071872
        lnFA |    .0831288     .1113166       -.0281878        .0180028
```

```
------------------------------------------------------------------------------
                            b = consistent under Ho and Ha; obtained from xtreg
             B = inconsistent under Ha, efficient under Ho; obtained from xtreg
    Test:  Ho:  difference in coefficients not systematic
                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       31.75
                Prob>chi2 =      0.0000
                (V_b-V_B is not positive definite)
```

Hausman test result for ethnic diversity and ROA

```
hausmanfe .
                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          S.E.
-------------+----------------------------------------------------------------
          ED |    .0015966    -.0026597        .0042563        .0030645
          BS |    .0000192     .0003692         -.00035        .0008098
          FL |   -.1995678    -.0847106       -.1148572        .0439359
       lnFS |   -.0041107    -.0045518        .0004411        .0029105
       lnFA |    .0170487     .0148338        .0022148        .0064056
------------------------------------------------------------------------------
                            b = consistent under Ho and Ha; obtained from xtreg
             B = inconsistent under Ha, efficient under Ho; obtained from xtreg
    Test:  Ho:  difference in coefficients not systematic
                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       11.36
                Prob>chi2 =      0.0447
```

Hausman test result for ethnic diversity and ROE

```
hausmanfe .
                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          S.E.
-------------+----------------------------------------------------------------
          ED |    .0106838    -.0038848        .0145686         .010873
```

```
          BS |    .0019406    -.0017988        .0037394        .0025699
          FL |   -.0742096     .3115737       -.3857833        .1433075
        lnFS |   -.0203386    -.0238662        .0035276        .0059535
        lnFA |     .082865      .115713        -.032848        .0169293
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg
    Test:  Ho:  difference in coefficients not systematic
                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =      202.29
                Prob>chi2 =      0.0000
                (V_b-V_B is not positive definite)
```

Appendix D: Results of random effect model

```
xtreg ROA GD BS FL lnFS lnFA,re
Random-effects GLS regression                   Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.2159                                         min =          5
     between = 0.6499                                         avg =        5.0
     overall = 0.3295                                         max =          5
                                                Wald chi2(5)      =      38.82
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
------------------------------------------------------------------------------
         ROA |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          GD |   .0071217   .0046217     1.54   0.123    -.0019366    .0161801
          BS |   .0006343   .0003838     1.65   0.098    -.0001179    .0013865
          FL |  -.0670735   .0242898    -2.76   0.006    -.1146807   -.0194663
        lnFS |  -.0063116   .0016884    -3.74   0.000    -.0096209   -.0030024
        lnFA |   .0184807   .0038458     4.81   0.000      .010943    .0260184
       _cons |   .1787372   .0296525     6.03   0.000     .1206194    .2368549
-------------+----------------------------------------------------------------
     sigma_u |          0
     sigma_e |  .00480738
         rho |          0   (fraction of variance due to u_i)
------------------------------------------------------------------------------
. xtreg ROE GD BS FL lnFS lnFA,re
Random-effects GLS regression                   Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.0651                                         min =          5
     between = 0.6195                                         avg =        5.0
     overall = 0.5636                                         max =          5

                                                Wald chi2(5)      =      21.32
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0007
------------------------------------------------------------------------------
```

```
         ROE |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          GD |  -.0459053   .0646739    -0.71   0.478    -.1726639    .0808532
          BS |  -.0009993   .0055987    -0.18   0.858    -.0119726    .0099741
          FL |   .3223536   .3164024     1.02   0.308    -.2977838    .9424909
        lnFS |  -.0234518   .0213793    -1.10   0.273    -.0653543    .0184508
        lnFA |   .1113166   .0452262     2.46   0.014     .0226748    .1999584
       _cons |   .2306839   .3532483     0.65   0.514    -.4616701    .9230378
-------------+----------------------------------------------------------------
     sigma_u |  .06624177
     sigma_e |  .03262067
         rho |  .80482531   (fraction of variance due to u_i)
------------------------------------------------------------------------------
. xtreg ROA ED BS FL lnFS lnFA,re
Random-effects GLS regression                   Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.2582                                         min =          5
     between = 0.6357                                         avg =        5.0
     overall = 0.3433                                         max =          5
                                                Wald chi2(5)      =      40.76
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
------------------------------------------------------------------------------
         ROA |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          ED |  -.0026597     .00132    -2.01   0.044    -.0052469   -.0000725
          BS |   .0003692   .0004136     0.89   0.372    -.0004414    .0011798
          FL |  -.0847106   .0262691    -3.22   0.001    -.1361971   -.0332241
        lnFS |  -.0045518   .0015735    -2.89   0.004    -.0076358   -.0014678
        lnFA |   .0148338   .0031214     4.75   0.000      .008716    .0209517
       _cons |   .1671611    .026811     6.23   0.000     .1146125    .2197097
-------------+----------------------------------------------------------------
     sigma_u |  .00042616
     sigma_e |  .00480734
         rho |  .00779728   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
. xtreg ROE ED BS FL lnFS lnFA,re
Random-effects GLS regression                   Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.0655                                         min =          5
     between = 0.6458                                         avg =        5.0
     overall = 0.5819                                         max =          5
                                                Wald chi2(5)      =      21.98
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0005
------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          ED |  -.0038848   .0198144    -0.20   0.845    -.0427204    .0349507
          BS |  -.0017988   .0055978    -0.32   0.748    -.0127702    .0091727
          FL |   .3115737   .3157478     0.99   0.324    -.3072806     .930428
        lnFS |  -.0238662   .0216065    -1.10   0.269    -.0662142    .0184818
        lnFA |    .115713    .045201     2.56   0.010     .0271207    .2043053
       _cons |   .2425172   .3542586     0.68   0.494    -.4518168    .9368513
-------------+----------------------------------------------------------------
     sigma_u |  .06330412
     sigma_e |  .03256355
         rho |  .79076018   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xtreg ROA AD BS FL lnFS lnFA,re
Random-effects GLS regression                   Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.2535                                         min =          5
     between = 0.5958                                         avg =        5.0
     overall = 0.3179                                         max =          5
                                                Wald chi2(5)      =      35.51
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
------------------------------------------------------------------------------
         ROA |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
          AD |   .0157148   .0157383     1.00   0.318    -.0151317    .0465613
          BS |   .0007167   .0004007     1.79   0.074    -.0000686    .0015021
          FL |  -.0618152   .0253873    -2.43   0.015    -.1115734    -.012057
        lnFS |  -.0051621   .0016016    -3.22   0.001    -.0083012   -.0020229
        lnFA |   .0150719   .0032505     4.64   0.000      .008701    .0214428
       _cons |   .1534344   .0285881     5.37   0.000     .0974028    .2094659
-------------+----------------------------------------------------------------
     sigma_u |  .00073259
     sigma_e |    .004815
         rho |  .02262512   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xtreg ROE AD BS FL lnFS lnFA,re
Random-effects GLS regression                   Number of obs     =         85
Group variable: Bank1                           Number of groups  =         17
R-sq:                                           Obs per group:
     within  = 0.0668                                         min =          5
     between = 0.6400                                         avg =        5.0
     overall = 0.5777                                         max =          5
                                                Wald chi2(5)      =      21.65
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0006
------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          AD |  -.0678305   .1538787    -0.44   0.659    -.3694272    .2337662
          BS |  -.0031371    .006503    -0.48   0.630    -.0158826    .0096085
          FL |   .2766338   .3213353     0.86   0.389    -.3531718    .9064394
        lnFS |  -.0240456   .0214299    -1.12   0.262    -.0660475    .0179563
        lnFA |   .1165968   .0451277     2.58   0.010     .0281481    .2050455
       _cons |   .2962098   .3631381     0.82   0.415    -.4155279    1.007947
-------------+----------------------------------------------------------------
     sigma_u |  .06458263
     sigma_e |  .03262125
         rho |  .79672721   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```