CAPITAL STRUCTURE DECISIONS OF FIRMS: EVIDENCE ON DETERMINANTS AND DYNAMICS OF CAPITAL STRUCTURES OF ETHIOPIAN BANKS

by

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DECLARATION

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ABSTRACT

Despite the fact that a preponderance of past studies in corporate finance mainly focus on capital structure decision of firms, the problems of "what factors determine the capital structure choice of firms and how firms adjust their capital structure dynamically" are still riddling. Hence, the aim of this study is to investigate the determinants of capital structure and capital structure adjustment dynamics of banks. To this end, the study employed a quantitative research approach. Specifically, secondary data have been collected through document review of annual reports of selected banks for longitudinal/panel research design. Besides, primary data have been collected through a self-administered questionnaire distributed to the selected Chief Financial Officers (CFOs) for the cross-sectional survey research design of the study. As the method of data analysis, the study estimates both static and dynamic panel models using fixed effect and GMM estimators respectively. Besides, in analyzing the cross-sectional survey responses, appropriate statistical techniques for order-ranked and nominal/categorical items of the responses have been employed. Specifically, in the univariate analysis of survey responses, mean scores and percentage of categorical responses have been computed for order-ranked and nominal items respectively. Moreover, to test the significance of differences of mean scores of order-ranked and percentage of responses of nominal items conditional on bank characteristics, the study employed the nonparametric Mann-Whitney test and the likelihood ratio test respectively. As the result, the tax shield from interest tax deductibility, profitability and/or size of free cash flows, growth opportunities and regulatory pressure factors are found to be significant determinants of capital structure decisions, consistently in estimations of panel models and cross-sectional survey. In

examining the capital structure adjustment dynamics, both the regression estimation and survey results revealed the tendency of banks in Ethiopia to set target capital structure and adjust towards it at a relatively faster speed of adjustment. Besides, both regression model estimation and survey results disclose the asymmetrical target capital structure adjustment of banks. To be specific, overleveraged or undercapitalized banks adjust more quickly than underleveraged or overcapitalized banks. Further, the speed of target capital structure adjustment is found to be heterogeneous across banks that differ in their absolute deviations from target capital structure, size, regulatory pressure for capital adequacy and ownership. Hence, by empirically examining the determinants and dynamics of capital structure of banks in Ethiopia, the study contributes to the existing body of knowledge on the subject under study, and/or it fills a gap in the existing reference literature on the subject. Most importantly, the study tries to untangle the capital structure issues of banks, especially the dynamics, in the context of the least developed financial system where there are no secondary market and oligopolistic banking sector.

Key Terms:

Capital Structure; Determinants of Capital Structure; Dynamics of Capital Structure; Leverage; Target Leverage; Target Capital Structure Adjustment; Symmetrical Target Adjustment; Asymmetrical Target Adjustment; Heterogeneous Target Adjustment; Regulatory Factors.

DEDICATION

~ To the Inspiring woman, Dear Mom ~

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LIST OF ABBREVIATIONS

General Abbreviations

- CFOs------ Chief Financial Officers
- NBE------- National Bank of Ethiopia
- TOT--------Tradeoff Theory
- POT---------Pecking Order Theory
- GMM-------Generalized Methods of Momentum
- OLS---------Ordinary Least Square
- RE---------- Random Effect
- FE---------- -Fixed Effect

Variable Abbreviations

- L------- Leverage
- Tx------ Effective Tax Rate
- Pr------- Profitability
- Gr------ Growth
- Col----- Collateral Value of Assets
- LnSz---- Bank Size
- McR--- Minimum Capital Requirement
- RgP-----Regulatory pressure for capital adequacy
- TDE---Target Deviation
- D^{above}----- Dummy for Overleveraged
- D^{below}---- Dummy for Underleveraged

CHAPTER ONE: ORIENTATIONS

1.1. Introduction

In corporate finance, the capital structure decision of firms has been imperative among financial economists debate (Abor, 2009). Specifically, the past inquiries on the capital structure decision of firms focused on explaining how firms choose and adjust the mix of their debt and equity financing for funding of their operations (Myers, 1984; Benito, 2003). Hence, in addressing the basic question of capital structure decision of firms, theoretical models have been developed. Besides, in testing the validities of these capital structure theoretical models, voluminous empirical literatures have been documented (Myers, 1984; Harris & Raviv, 1991; Chen, 2004).

The genesis of modern theoretical explanation of capital structure decision of firms can be traced back to the foundation work of Modigliani & Miller (1958) irrelevance proposition (Myers, 2001)[1]. In the absence of imperfections, Modigliani & Miller (1958) proposed and proved the irrelevance of capital structure decision for value maximization of firms. Understandably, the irrelevance proposition implies that the choice of any mix of debt and equity securities over another has nothing to do with value maximization (Modigliani & Miller, 1958). Later on, however, by departing from the frictionless world of Modigliani & Miller (1958), other theoretical models of capital structure have been developed to explain how and why capital structure decision of firms is relevant (Myers, 2001). Prominently, these theoretical models of capital structure include tradeoff

[1] MM irrelevance proposition transcends the traditional view of capital structure (Prasad *et al.*, 2001).

(Modigliani & Miller, 1963; Kraus & Litzenberger, 1973; Jenson & Meckling, 1976; Miller, 1977; Myers, 1977; Warner, 1977; Myers, 1984; Fischer *et al.*, 1989) and pecking order theoretical models (Myers, 1984; Majluf & Myers, 1984). In the tradeoff theoretical model, the capital structure decision of firms is explained as they balance the costs of equity or benefits of debt financing in the form of tax shield (Modigliani & Miller, 1963; Miller, 1977; DeAngelio & Masulis, 1980) and reduction of agency problem (Jenson & Meckling, 1976; Jenson, 1986) with the benefit of equity or costs of debt financing related to costs of distress (Kraus & Litzenberger, 1973; Warner, 1977) and agency cost of debt from asset substitution (Jenson & Meckling, 1976) and underinvestment (Myers, 1977) to attain target capital structure. However, in the presence of adjustment, firms may deviate from the equilibrium condition and tend to revert to it through time (Myers,1984;Frank&Goyal,2008). In contrast, in the pecking order theory, firms choose hierarchical financing in their capital structure decision (Majluf & Myers, 1984; Myers, 1984). In the pecking order theory, then, firms prefer internal financing to external financing and, in external financing, debt is preferred to equity financing to minimize information asymmetry related costs (Majluf & Myers, 1984; Myers, 1984). Unlike the tradeoff theory, the pecking order theory doesn't specify the presence of target capital structure; rather, observed capital structure is the cumulative result of information asymmetry (Majluf & Myers, 1984; Myers, 1984).

Following the predictions of these theoretical models, a large number of empirical studies have been conducted to test their validities over the past few decades (Harris & Raviv, 1991). These empirical studies mainly came along two main strands (Frank & Goyal, 2008). In the first strand, past empirical studies—for example, in US (Titman & Wessels, 1988; Frank & Goyal, 2004), in

G-7 countries (Rajan & Zingales, 1995), in ten selected developing countries (Booth *et al.*, 2001), in China (Chen, 2004), in Ghana (Abor,2008), in Libya (Buferna *et al.*, 2005), among others—examined the determinants of capital structure of firms and tested empirical validities of theoretical models, in a static framework (Heshimite, 2001). In the other strand, past empirical studies—for example, in US (Jalilivand & Harris, 1984; Hovakimian *et al.,* 2001; Leary & Roberts, 2005; Flannery & Rangan, 2006), in Spain (DeMiguel & Pindado, 2001), in UK (Banjerre *et al.*, 2000; Ozkan,2001), in selected European countries (Antoniou *et al.*, 2008), in Portugal (Serrasqueiro & Nunes, 2010), among others)—investigated and tested the theoretical predictions of target capital structure adjustment dynamics.

However, a clear understanding of the capital structure decision of firms is still elusive (Harris & Raviv, 1991; Marques & Santos, 2003; Chen & Strang, 2005). The conundrum of the capital structure decision of firms is clearly manifested in the lack of well-documented and indubitable evidences on the validities of capital structure theoretical models. Noticeably, available evidences often appear to show a significant dependence on the observed reality and the methodology applied (Iwarere & Akinley, 2010; Marques & Santos, 2003). Obviously, in testing theoretical models, a preponderance of past empirical studies on the determinants of capital structure (Chen, 2004; Frank & Goyal, 2004; Rajan & Zinglas, 1995; Booth *et al.*, 2001; Abor, 2008) examined the factors behind the variations in observed capital structure of firms, assumed to be optimal, in a static framework (Drobetz & Wanzenried, 2006). Hence, these studies didn't address the theoretical predictions of the determinants of the variations in the optimal capital structure (Heshimite, 2001; Drobetz & Wanzenried, 2006). The deficiencies of these studies mount up in

the presence of adjustment costs that may hinder firms to change their capital structure the way they desire instantaneously (Myers, 1984; Drobetz & Wanzenried, 2006). Moreover, past studies on target capital structure adjustment dynamics (DeMiguel & Pindado, 2001; Hovakimian *et al.*, 2001; Ozkan, 2001; Leary & Roberts, 2005; Drobetz & Wanzenried, 2006; Flannery & Rangan, 2006; Serrasqueiro & Nunes, 2010) are found to be inconclusive. Contradictory evidences have been documented for the adjustment dynamics of firms operating in different institutional frameworks and adjustment costs thereof (Ozkan, 2001; Antoniou *et al.*, 2008). Besides, these studies also implicitly assume the symmetrical adjustment and homogeneity of target capital structure adjustment across firms (Byoun, 2008; Dang *et al.*, 2008). Hence, these studies failed to test the possible asymmetry and/or heterogeneities in capital structure adjustment dynamics. As adjustment costs may differ for overleveraged and underleveraged firms, adjustment dynamics may be asymmetrical (Byoun, 2008). In addition, the speed of adjustment may be heterogeneous across firms which may differ in their characteristics and thereby face adjustment costs differently (Flannery & Hankins, 2007; Dang *et al.*, 2012). Further, past studies conducted both in static and dynamic frameworks use only the available accounting data and regression analysis method (Beattie *et al.*, 2006). Hence, in testing theoretical models, these studies were limited to the variables to be available in accounting data (Beattie *et al.*, 2006). Moreover, these studies dealt only with the outcomes of capital structure decision rather than the processes involved in the dynamic perspectives (DeJong & van Dijk, 2001; Beattie *et al.*, 2006; Nor *et al.*, 2012). On the top of these limitations, most importantly, past studies that tested theoretical models both in static and dynamic perspectives also focused mainly on nonfinancial firms and mostly neglected or excluded the data of banks and other financial firms (Baranoff *et al.*, 2008; Gropp & Heider, 2009). On the other

hand, as banks differ from nonfinancial firms in their capital regulation, past studies in banking literature (Ediz *et al.*, 1998; Furfine, 2000; Rime, 2000; Nachane *et al.*, 2001; Kuo & Lee,2003) mainly focused on the regulatory forces and hence neglected factors predicted in the theoretical models of financing decisions of corporate firms, in general. Thus, evidences on the validities of the theoretical models of capital structure in the financial sector, particularly banking firms, are very limited. Likewise, evidence on the effect of capital regulation holds in banks operating in the presence of explicit deposit insurance (Sharp, 1995; Wall & Peterson, 1996). Hence, the existing evidences on the capital regulation may not hold in the capital structure decisions of banks in the least developing countries, like Ethiopia, as they are operating in a regulatory environment in absence of explicit deposit insurance (Marcus, 1989; Sharp, 1995; Wall &Peterson, 1996; Kiyota *et al.*, 2007). For these reasons, it is necessary to empirically investigate the capital structure decisions of banking firms in Ethiopia.

To that end, the aim of the present study is to investigate the determinants that explain the capital structure choices and the capital structure adjustment dynamics of Ethiopian banks using panel model regression and cross-sectional survey. As a backdrop, Ethiopia is one of the East African countries with the population of nearly 100 million (CSA, 2012). Even if it shares many features with those other countries, Ethiopia is identified as one of the least developing countries with a less developed financial sector compared to that of other African and developing countries (Kiyota *et al.*, 2007). During the period before the year 1991, state control ruled the Ethiopian economy. As a result, there were only state-owned financial institutions and high involvement of the government that funded cash flows to the politically privileged projects (Geda, 2006). However, after the year post-1991 or post-downfall of the military government, a new economic policy direction was

designed for orienting the country towards the market policy and for its development to be based on the private sector participation (Addison & Geda, 2003). In this regard, the financial sector reform was made in the year 1994 during which the roles of the National Bank of Ethiopia (NBE) in regulating financial institutions were re-proclaimed. Besides, the existing state-owned financial institutions were reorganized to work in a market-oriented framework, and domestic private banks and other financial institutions (but not foreign-owned ones) were allowed to enter the financial sector (Addison & Geda, 2003; Geda, 2006). In effect, even though they are underdeveloped, notable expansions and development of banks and other financial institutions have been observed in Ethiopia over the past 20 years. However, the banking sector of Ethiopia is still characterized by the dominance of public-owned banks and high bank concentration (Kiyota *et al.*, 2007). The financial landscape can be characterized as highly bank-based with the absence of a secondary market and explicit deposit insurance scheme (Kiyota *et al.*, 2007). Hence, by empirically investigating the determinants of the capital structure and the dynamics of capital structure adjustment in the banks of Ethiopia, the study contributes to the efforts to fill the gap in the literature on the capital structure decisions of firms. To be specific, the study provides evidence for the capital structure theoretical models in the context that differs from their originations. Further, in light of the deregulation of the banking sector, the capital holdings of banks are under the supervision of the National Bank of Ethiopia (NBE). Thus, the effectiveness of capital regulation entails the need for understanding the determinants of the capital structure and adjustment dynamics in banks.

1.2. Statement of the Problem

Despite the fact that a preponderance of past studies in corporate finance mainly focused on the capital structure decision of firms, the problem of the capital structure decision of firms, particularly the question, "What factors determine the capital structure choice of firms and how do they adjust their capital structure dynamically?," is still baffling (Myers, 1984). Lack of a compelling validation of theoretical models in the past empirical studies clearly indicates the conundrums in the capital structure decisions of firms (Harris & Raviv, 1991; Marques & Santos, 2003; Iwarere & Akinley, 2010).

Specifically, as pointed out earlier, past studies on the determinants of capital structure (Titman & Wessels, 1988; Rajan & Zingales, 1995; Booth *et al.*, 2001; Frank & Goyal, 2004; Abor, 2008) examined the factors for the cross-sectional variations in the capital structure of firms. Given the documented inconsistencies and contradictions of evidences, these studies also examined the determinants for the cross-sectional variations in observed capital structure of firms rather than the variations in the optimal capital structure predicted in theoretical models (Heshimite, 2001; Drobetz & Wanzenried, 2006). Besides, these studies failed to investigate the possible dynamism in the capital structure that may be inherent in the possible adjustment costs that induce lags in the target capital structure adjustments (Marcus, 1983; Sharp, 1995; Banjeree *et al.*, 2000; Drobetz & Wanzenried, 2006; Berger *et al*, 2008). Hence, past studies (DeMiguel & Pindado, 2001; Hovakimian *et al.*, 2001; Ozkan, 2001; Leary & Roberts, 2005; Flannery & Rangan, 2006) also examined the capital structure decision of firms in a dynamic framework. However, given the inconclusive evidences, these studies also assumed only the symmetrical and firm or invariant

capital structure adjustment. As a result, these studies didn't test the possible asymmetric and/or bank variant or heterogeneous capital structure adjustment processes (Berger *et al.*, 2008; Byoun, 2008; Dang *et al.*, 2008). Further, as mentioned earlier, those past studies that were conducted both in static and dynamic frameworks merely used available accounting data and regression methods (Beattie *et al.*, 2006; Nor *et al.*, 2012). Hence, unless complemented with a cross-sectional survey, these studies couldn't fully test the validities of theoretical models. Specifically, different factors that are predicted in theoretical models may not be either easily quantifiable or available in accounting secondary data (De Jong & van Dijk, 2001). Besides, as these studies dealt with the outcomes, the processes of capital structure decision-making would be far-fetched in a dynamic perspective (Beattie *et al.*, 2006; Nor *et al.*, 2012). On the top of lack of surefire evidences, most importantly, past studies in the capital structure decision of firms that tested theories of capital structure both in a static framework (Titman & Wessels, 1988; Rajan & Zingales, 1995; Booth *et al.*, 2001; Frank & Goyal, 2004; Abor, 2008) and in a dynamic framework (De Miguel & Pindado, 2001; Hovakimian *et al*, 2001; Ozkan, 2001; Leary & Roberts, 2005; Drobetz & Wanzenried ,2006; Flannery & Rangan, 2006; Serrasqueiro & Nunes, 2010) focused mainly on nonfinancial firms and incessantly neglected or excluded data of banking firms (Baranoff *et al.*, 2008; Gropp & Heider, 2009). On the other hand, past studies in bank capital structure—for example, in Switzerland (Rime, 2000), in US (Furfine, 2000), in UK (Ediz *et al.*, 1998), in India (Nachane *et al.*, 2001)—mainly focused on regulatory factors (Kuo & Lee, 2003). Thus, empirical evidences on the validities of the capital structure theoretical models in banking firms are very limited. Moreover, the documented evidences on the capital regulation of banking firms have been made based on the data of banks that operate in a regulatory environment with explicit deposit

insurance schemes (Sharp, 1995). In such a regulatory environment, capital regulation may be expected to be binding on the incentives that would be provided to the banks to hold low capital in their moral hazard tendency (Sharp, 1995; Wall & Peterson, 1996). Hence, these types of evidence on regulation may not hold in the capital structure decisions of banks that operate in the absence of explicit deposit insurance (Sharp, 1995). Recently, few empirical studies have also investigated the determinants of the banks' capital structure—for example in US and EU countries (Gropp & Heider, 2009), in Ghana (Amidu, 2007), in Turkey (Çağlayan & Sak, 2010), in Nigeria (Iwarere & Akinley, 2010)—based on standard firm level determinants that are deemed to be important in nonfinancial firms (Titman & Wessels, 1988; Rajan & Zingales, 1995; Booth *et al.*, 2001; Frank & Goyal, 2004; Abor, 2008). Similarly, the recently available few empirical studies (Usman, 2014; Mohammed *et al.*, 2015) that were conducted using the data of Ethiopian firms also examined capital structure using standard firm level determinants[2]. However, as indicated earlier, these studies failed to examine the determinants of cross-sectional variations in the optimal capital structure predicted in theoretical models (Heshimite, 2001; Drobetz & Wanzenried, 2006). These studies neglected the possible adjustment costs that may induce lags in the target capital structure adjustment dynamics (Marcus, 1983; Sharp, 1995; Banjeree *et al.*, 2000; Drobetz & Wanzenried, 2006; Berger *et al.*, 2008). Besides, these studies mainly focused on the factors predicted in the corporate finance theoretical models. Thus, these studies neglected the effects of regulatory factors on the capital structure of banks (Brewer *et al.*, 2008). Further, albeit scant, those past empirical

[2] As to the best knowledge of the researcher, the recent few studies that were conducted using data of Ethiopian firms include both published works (Usman, 2014; Mohammed *et al.*, 2015) and unpublished works (Amanuel, 2011; W/Michael, 2012). However, these studies failed to test theoretical models in the dynamics. Besides, Usman (2014) primarily examined the capital structure of large taxpayer share companies. Further, Mohammed *et al.* (2015) considered only factors that are found to be relevant to explain the cross-sectional variations in the leverage of nonfinancial firms and neglected regulatory factors in examining the capital structure decision of banks.

studies had also examined the capital structure decisions of banks in a dynamic framework, for example in US (Marcus, 1983), in Australia (Sharp, 1995), and in selected industrialized countries (Brewer *et al.*, 2008). These studies considered both the factors predicted in theoretical models and regulatory forces. However, similar to past studies in nonfinancial firms (DeMiguel & Pindado, 2001; Hovakimian *et al.*, 2001; Ozkan, 2001; Leary & Roberts, 2005; Flannery & Rangan, 2006), these studies assumed only symmetrical and/or homogenous capital structure adjustment dynamics to test the predictions of theoretical models in a dynamic perspective. Hence, these studies didn't address the possible asymmetric and/or bank variant or heterogeneous capital structure adjustment processes (Berger *et al.*, 2008; Byoun, 2008; Dang *et al.*, 2008). Furthermore, these studies were conducted in the banks of developed countries that operate in the presence of explicit deposit insurance (Sharp, 1995). Due to this, the documented evidences on regulatory forces may not hold in the banks of developing countries that operate in its absence (Sharp, 1995).

Thus, given the existing gaps in the literature and the unique features of the Ethiopian financial landscape, there is an acute need for examining the determinants and dynamics of the capital structure of Ethiopian banks. Over the past two decades or so, banks in Ethiopia have shown cross-sectional and time series variations in their capital structure (*see* Annex 1). Banks can be characterized as any other corporate firms and regulated entities in their capital structure (Berger *et al.*, 1995; Wall & Peterson, 1996; Brewer *et al.*, 2008). The capital holdings of banks received high attentions from regulators as the failure of banks may tempt the ruin of the entire economy (Marcus, 1983; Santos, 2001). However, banks may hold capital above the regulatory minimum that may be related to different factors predicted in the theoretical models. In the capital structure choice and adjustment dynamics, these factors may provide a number of benefits and, at the same

time, entail different costs for shareholders (Wall & Peterson, 1996; Nachane *et al.*, 2001). Hence, the capital structure decisions of Ethiopian banks may be explained based on factors predicted in the tradeoff and pecking order theoretical models[3] and pertinent regulatory forces.

The central research question of the present study is: *What factors determine the capital structure choices of banks in Ethiopia and how do banks adjust their capital structure dynamically in Ethiopia?*

Sub-questions of the study are:

- *To what extent do the corporate finance determinants relate to the capital structure choices of banks in Ethiopia?*
- *To what extent do pertinent regulatory factors relate to the capital structure of banks?*
- *Do banks adjust their capital structure towards the target? And if so, how fast?*
- *Are the dynamics of the capital structure adjustment of banks asymmetrical?*
- *Are the dynamics of the capital structure adjustment of banks heterogeneous? If so, what factors determine the heterogeneity in the speed of adjustment?*

[3] *Market Timing* and *Signaling* are also other theories of capital structure. *Market Timing(or Windows of Opportunity) Theory* states that the choice of debt or equity depends on managers' exploitation of information asymmetries to assess which option better benefits shareholders (Baker & Wurgler, 2002). *Signaling Theory* postulates that manager-insiders have information about their own firms not possessed by outsiders, and hence investors look for two types of signals from the managers: the amounts of (a) debt and (b) dividends issued (Ross, 1977). However, given the absence of secondary market and oligopolistic financial landscape of Ethiopia, these theoretical models are not the focus of the study.

- *Are the banks' capital structure choices providing empirical support to* ***extant*** *theories (particularly a tradeoff theory, or a pecking order theory, or both)?*

1.3. Aim and Objectives

The general aim of the present study is to examine the determinants of the capital structure choices and dynamics of the capital structure adjustments of Ethiopian banks. To this end, the following specific objectives have been formulated:

- To examine how the corporate finance determinants relate to the capital structure choices of banks in Ethiopia.
- To identify the extent to which pertinent regulatory factors relate to the capital structure of banks in Ethiopia.
- To examine the dynamic or the partial capital structure adjustment process of banks towards the target and thereby to estimate the speed of adjustment.
- To investigate the asymmetric target capital structure adjustment of banks in question.
- To examine the heterogeneity in the capital structure adjustment dynamics and thereby to identify factors determining the heterogeneity in the speed of adjustment.
- To examine the validities of the tradeoff and pecking order theories in the capital structure of banks in the context of the financial sector in Ethiopia.

- To develop a model of the determinants of capital structure and capital structure adjustment dynamics of banks in Ethiopia.

1.4. Rationales and/or Importance of the Study

The study investigates the determinants and dynamics of banks' capital structure in Ethiopia with different justifications:

Firstly, despite the fact that the capital structure decisions of firms are found to be a central issue in the past inquiries into corporate finance, the "puzzles" of the capital structure of firms are not yet resolved (Myers, 1984). As pointed out earlier, past studies failed to provide unequivocal validation of the theoretical models. The documented evidences are found to be context- and methodology-dependent (Harris & Raviv, 1991; DeMiguel & Pindado, 2001; Ozkan, 2001; Flannery & Rangan, 2006). Besides, theories of capital structure have been developed and mostly tested in developed economies (Booth *et al.*, 2001) or in developing countries with less developed financial markets (Ignacio, 2000; Buferna *et al.,* 2005). Scanty studies are available that have tested the capital structure theories by empirically examining the determinants and dynamics of capital structure based on the data of firms operating in the least developing countries, particularly in Ethiopia, in absence of secondary markets (Kiyota *et al.*, 2007)[4]. Then, the existing puzzles in capital structure and lack of empirical studies in the least developing countries, particularly in Ethiopia, have motivated the present researcher to conduct this study. In doing so, the study contributes to the

[4] As to the best knowledge of the researcher, there is no prior study in Ethiopia that examines banks' capital structure determinants and adjustment dynamics based on static and dynamic panel data models and data of a cross-sectional survey. As discussed earlier, the available few studies (Usman, 2014; Mohammed *et al.*, 2015) on Ethiopian firms have investigated the determinants of capital structure of the firms merely in a static framework.

extant literature on the subject, by providing empirical evidences on the explanatory power of theoretical models in the context that differs from their originations (Rajan & Zinglas, 1995).

Secondly, empirical studies in the capital structure of firms that have tested the tradeoff and pecking order theories often neglect banks and other financial firms (Baranoff *et al.*, 2008; Gropp & Heider, 2009). The basic reason for such exclusion is that funding sources of banking firms differ from that of other corporate firms and that banking firms are relatively highly leveraged (Rajan & Zinglas, 1995). In addition, the capital holdings of banks face relatively higher regulatory forces than nonfinancial firms (Baranoff *et al.*, 2008). On the other hand, past studies on the capital structure of banks have focused mainly on the regulatory factors for examining their possible differences rather than similarities with other corporate firms, with respect to their capital structure decisions (Kuo & Lee, 2002). The exclusions of banking firms in past empirical studies seem reasonable (Baranoff *et al.*, 2008) and it is hardly justifiable to neglect regulatory forces in examining financing decision of banks (Brewer *et al.*, 2008). However, it also motivates the present researcher to examine the capital structure decisions of banks, by integrating factors predicted in the theoretical models and possible regulatory forces on capital holdings (Baranoff *et al.*, 2008). Hence, the present study would fill the gap in the extant empirical literature on the subject by testing the validities of theoretical models, which are developed and mostly tested in nonfinancial firms, in the specific context of banking firms in Ethiopia. Besides, unlike previous evidences on regulatory forces documented in banks which operate in the presence of explicit deposit insurance, the present study would also fill a gap in the literature, by providing empirical evidence for pertinent regulatory factors on banks operating in its absence (Sharp, 1995).

Thirdly, despite the fact that considerable evidence of past studies in developed countries generally suggest the presence of target capital structure adjustment; this issue has barely been examined by the empirical literature in the developing countries (Prasad *et al.*, 2001). Available few recent studies (Amidu, 2007; Octovia & Brown, 2008; Çağlayan & Sak, 2010) that have investigated the capital structure of banks in developing countries were conducted based on a static framework and ignored the possible lags in the capital structure adjustment (Heshimite, 2001). Further, the documented evidences revealed inconsistencies in the speed of adjustment, whereby the rate of adjustment is context-dependent. Specifically, both the costs of deviations from the target and costs of adjustments are highly affected by the firms' institutional, legal and financial environment (Antoniou *et al.*, 2008). This is particularly true in banking firms operating in the least developing countries like Ethiopia. So, investigating the determinants of bank capital structure, by allowing possible lags in the capital structure adjustment dynamics, would be valuable in order to fill the gaps in the literature on capital structure adjustment dynamics.

Fourthly, past studies that investigated the capital structure adjustment dynamics of firms had been mainly conducted based on a symmetrical or partial adjustment model. This model assumes that all firms adjust at a constant speed of adjustment. Therefore, these studies have mainly neglected the possible asymmetry and/or heterogeneity in the speed of adjustment for banks with varying characteristics (Berger *et al.*, 2008; Byoun, 2008). This would be the rationale for the need to investigate the possible asymmetrical and heterogeneous target capital adjustment dynamics of banks. Thus, by investigating the possible asymmetry in the speed of adjustment towards the target, for overleveraged and underleveraged banks, and the factors for the possible heterogeneity in the

rate of adjustment, the study would provide further evidence for the dynamic tradeoff or target capital structure adjustment theory of capital structure (Byoun, 2008).

Finally, the study would have practical and policy relevance. Specifically, the study would have paramount importance in the improvising effort of management practices in the areas of capital structure decision. By examining the financing behavior of commercial banks, the findings would have a practical relevance for its valuable insights into the capital structure choice that maximizes values. In other words, an identification of the determinants of capital structure and the dynamics would have a contribution to the capital structure policy formulation that maximizes the value of banks (Marques & Santos, 2003). Besides, in light of the deregulation of the banking sector, the capital holdings of banks are under the supervision of the National Bank of Ethiopia (NBE). Thus, the effectiveness of capital regulation entails the need for understanding the determinants of capital structure and its adjustment dynamics. It is useful to understand how the market forces interact with the regulatory forces (Berlin, 2001). Thus, the study would provide valuable input into the government's efforts to design and revise banks' regulatory instruments with a view to achieving the desired solvency and financial stability of banks and thereby maintaining the active role of banks to fuel the economic growth of Ethiopia.

1.5. Delimitation/Scope of the Study

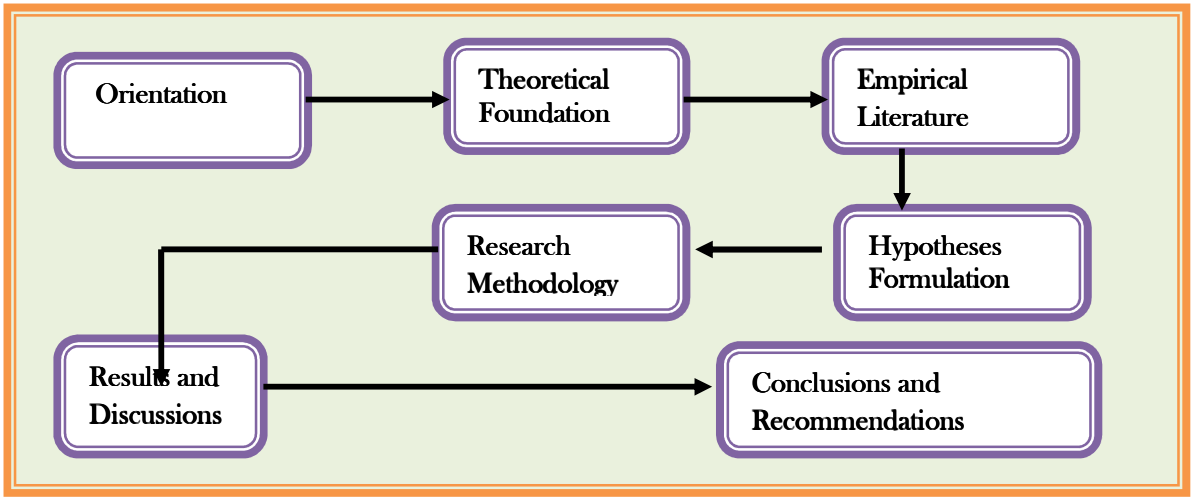
As pointed out in preceding sections, the main purpose of the study is to examine the determinants and dynamics of the capital structure of banks. Accordingly, the study has been delimited to an investigation of the determinants of capital structure, given the equilibrium condition and adjustment towards the equilibrium or target capital structure. More specifically, the

study has been delimited to examining —the corporate finance set of determinants of capital structure (including effective tax rate, profitability and/or size of free cash flows, growth opportunities, collateral values of assets, size and risk), pertinent regulatory factors and capital structure adjustment dynamics of banks. In doing so, empirical data were collected from the selected sample of fourteen commercial banks with a minimum three years of operation, and/or from selected CFOs of banks with a minimum one year of tenure, which were registered as incorporated banks of Ethiopia under the proclamations of the NBE and have been operational over the period between 2000 to 2012. As the study deals with the banking industry, the industry's mean average is not considered as one of the determinants of the capital structure and capital structure adjustment dynamics (Frank & Goyal, 2008). Moreover, macroeconomic factors have not been considered. Any macroeconomic shocks and regulatory factors other than capital regulation have been addressed using the time dummy variable (Kleff & Weber, 2004).

1.6. Outline of the Study

The study is organized in seven chapters, as shown in Figure 1.1 below.

Figure 1.1 Organization of the study



As depicted in Figure 1.1, the first chapter covers the orientation of the study which is intended to describe the context of research and the identified problem. The second chapter discusses the theoretical underpinnings of the study. This is followed by a review of relevant empirical studies in the third chapter. In other words, Chapter Two and Chapter Three would be the foundation for the hypotheses formulation of the study in Chapter Four. The fifth chapter discusses the research methodology employed in the study. The sixth chapter contains the empirical results and discussions with respect to the determinants of capital structure and the dynamics of the capital structure adjustment of banks in Ethiopia. The final chapter presents the conclusions of the study and recommendations for further research.

CHAPTER TWO: THEORETICAL FOUNDATION OF THE STUDY

2.1. Introduction

The modern theoretical explanation of capital structure decision of firms has begun with the foundation work of Modigliani & Miller (1958) irrelevance proposition (Myers, 2001). In this irrelevance proposition, Modiglian & Miller (1958) have indicated that the financing decision of firms doesn't matter (Myers, 2001). Specifically, for a given investment, the value of firms is independent of its financing decision (Modiglian & Miller, 1958). Hence, any degree of financing mix is as good as any other (Frank & Goyal, 2008). No difference exists between internal financing and external financing, short-term and long-term debt, risk-or non-risk financial instrument, debt or equity (Harris & Reviv, 1991; Myers, 2001; Frank & Goyal, 2008). However, Modigliani & Miller (1958) irrelevance proposition proved valid only under perfect market assumptions (Frank & Goyal, 2008). Thus, the basic contribution of Modigliani & Miller (1958) irrelevance proposition is that it shows conditions under which capital structure decision does matter for value maximization (Miller, 1992; Frank & Goyal, 2008).

In effect, departing from the frictionless world of Modigliani & Miller (1958), other theoretical models have been developed to explain how and why the financing decision of firms is relevant. Specifically, by introducing market imperfections of taxes, costs of distress, agency costs and asymmetric information costs, the tradeoff and the pecking order theoretical models of capital structure have been developed. These theoretical models are found to be dominant in the body literature that explains the financing decision of corporate firms in general (Brewer *et al.*, 2008). However, unlike other corporate firms, banks are also subject to regulation in their capital

holdings. Then, bank capital structure may be explained based on the factors predicted in the tradeoff and pecking order theories and regulatory forces (Berger *et al.*, 1995). Thus, this chapter has been devoted to outlining the theoretical foundation of the study. To this end, the central ideas and explanations underlying the tradeoff theoretical model have been discussed first under section 2.2. Then, section 2.3 presents the pecking order theoretical model. The theory of bank capital regulation is discussed under section 2.4. Finally, section 2.5 provides the summary of theoretical foundation of the study.

2.2. Tradeoff Theory

In a tradeoff theory, firms tend to balance the benefit of debt financing (Modigliani & Miller, 1963; Jenson & Meckling, 1976; Miller, 1977; DeAngelio & Masulis, 1980; Jenson, 1986) and the cost of debt financing (Kraus & Litzenberger, 1973; Jenson & Meckling, 1976; Myers, 1977; Warner, 1977) in their capital structure decisions. Hence, the tradeoff theory predicts the presence of optimal or target capital structure to be obtained at the point where the marginal benefits equal to the marginal costs of debt financing (Myers, 1984). However, in the presence of adjustment costs, firms may deviate from their target and hence tend to adjust towards it through time (Myers, 1984; Frank & Goyal, 2008). The speed of adjustment towards the optimal or target capital structure depends on the adjustment costs and the costs of deviation from the target (Flannery & Hankins, 2007). If adjustment costs are prohibitively high, firms may take long excursions away from their target (Myers, 1984). Then, this section of the chapter discusses the explanations of the tradeoff theoretical model. As there are different benefits and costs of debt financings to be considered, the tradeoff theoretical model takes a variety of forms (Chen & Strang, 2005). Nevertheless, in the

specific context of the present study, the tradeoff theory has been presented in its two basic variants: Tax-Cost of distress tradeoff model and Agency costs tradeoff model (as shown under 2.2.1 & 2.2.2 respectively). Then, the third subsection covers the predictions of the dynamic tradeoff (target capital structure adjustment) theory.

2.2.1. Tax Shield and Cost of Financial Distress Tradeoff Theoretical Model

In the tax shield and cost of financial distress tradeoff theoretical model, the optimal capital structure is determined when the benefits of tax shield of debt and costs of financial distress are balanced (Myers, 1984). As a result, firms tend to substitute debt for equity financing or vice versa up to the point where the marginal tax shield of debt equals the marginal costs of financial distress (Myers, 1984; Frank & Goyal, 2008).

2.2.1.1. Taxation

At the early stage, Modigilian & Miller (1963) recognized the need to alter their perfect market assumption that underlies their original irrelevance proposition (Modigliani & Miller, 1958). Specifically, Modigilian & Miller (1963) introduced corporate tax and explained why the capital structure decision is relevant. In the presence of corporate tax, firms tend to increase their debt financing to take the benefits of corporate tax shields from tax-deductible interest payment for debt financing (Modigilian & Miller, 1963; Myers, 1984). This tax shield benefit is not available in dividend payments for the use of equity financing (Berger *et al.*, 1995). Hence, the value of leveraged firms equals the value of unleveraged firms plus the tax shield of debt from interest payment deductions (Modigilian & Miller, 1963; Myers, 1984). This explanation has been

considered as the original tradeoff theory or the pure Modigliani & Miller (1963) theory (Myers, 1984; Frank & Goyal, 2008). The extreme implication of pure Modigliani & Miller (1963) theory is that firms continuously increase debt financing to grab the benefits of tax shield on interest payments of debt (Miller, 1977; Myers, 1984). However, this extreme implication of the pure Modigliani & Miller (1963) theory has been challenged by the famous work of Miller (1977), among others.

In explaining the tax shield of debt, Modigliani & Miller (1963) consider only the corporate tax shield. By introducing the personal tax rate, Miller (1977) reclaimed the leverage irrelevance proposition (Modigliani & Miller, 1958). In the presence of the marginal personal tax rate of stock that is less than the personal tax rate on debt, the gain from tax shield would be less than the gain only from corporate tax shield (Miller, 1977). This implies that firms will tend to increase debt financing until the marginal corporate tax saving (i.e., corporate tax rate) is equal to the personal tax loss (personal tax rate) (Prasad *et al.*, 2001). In this sense, Miller (1977) contends that in the presence of both personal tax rate and corporate tax rate, the tax structure determines leverage at the aggregate level but is irrelevant for an individual firm (Myers, 1984). Miller (1977) describes the observed capital structure decision of firms as "neutral mutation". Specifically, Miller (1977) indicates that firms may fall or be trapped into some kind of financial pattern or habit, which has no effect on firms' value (Myers, 1984).

Further, DeAngelio & Masulis (1980) examined whether leverage irrelevance theory proposed by Miller (1977) holds in a wider definition of corporate tax code. In doing so, they introduced the non-debt tax shield of debt from depreciation expenses and investment tax credits. Their analysis

overturned Miller's (1977) leverage irrelevance theory (Myers, 1984). De Angelio & Masulis (1980) indicated the existence of a unique interior optimal capital structure for each firm after consideration is given to non-debt tax shields. In the presence of firms with a high amount of the non-debt tax shied in the form of depreciation and other expenses relative to their cash flows, the marginal benefit of corporate tax shield from increasing debt financing declines (De Angelio & Masulis, 1980). Thus, we can expect a negative relationship between the non-debt tax shield and debt financing in total capital (De Angelio & Masulis, 1980).

2.2.1.2. Cost of Financial Distress

To seize the benefits of tax shield of debt, firms may tend to increase the use of debt financing. However, the continual increase of debt financing is not without cost. As firms tend to increase debt financing, they also face the increased costs of financial distress (Kraus & Litzenberger, 1973; Warner, 1977).

In the extant theoretical literature on capital structure, costs of financial distress are characterized as having two dimensions: (i) the probability of default and (ii) the monetary impact (size) when the default materialized (Myers, 1984). Warner (1977) also classifies the costs of financial distress as direct and indirect costs. Direct costs include the bankruptcy and related costs for legal and administrative procedures (Warner, 1977; Myers, 1984). Bankruptcies of firms occur when they fail to meet obligations or debt commitments (Berger *et al.*, 1995). Indirect costs are those costs that results from the perception that the probability of bankruptcy is high (Warner, 1977)[5]. This

[5] High perception of financial disterss is found to be negatively related to the attitudes towards banks in Nigeria (Babalola,2009).

holds true even when bankruptcy has not actually materialized (Warner, 1977). Indirect costs include the opportunity costs of lost sales due to a low motivation of key management and employees. Besides, it may be due to the presence of suppliers, who are not willing to provide the necessary inputs, and customers, who are not willing to use the product or service of firms that are perceived to be bankrupt.

As a result, as to the tradeoff between tax shield of debt and bankruptcy costs, Kraus & Litzenberger (1973) have indicated the existence of optimal capital structure in state preference model. However, Miller (1977) argues that the bankruptcy costs are too small to offset the corporate tax shield of debt to reach non-existence of optimal leverage for each firm in the market equilibrium. On the contrary, De Angelio & Masulis (1980) have documented the existence of optimal capital structure in the presence of bankruptcy costs.

2.2.2. Agency Costs Tradeoff Theoretical Models

In the agency costs tradeoff theoretical models, the capital structure decision of firms is found to be relevant due to the presence of agency cost[6]. Agency costs become apparent from the agency-principal relationship inherent in the separation of the ownership and control of modern corporate firms (Berle & Means, 1967; Jenson & Meckling, 1976). The agency-principal relationship emerges when one party called the principals (or the purveyors of capital) to assign the agent (or

[6] Jenson&Meckling (1976) define agency cost as "the sum of (i) the monitoring expenditures by the principal, (ii) the bonding expenditures by agent, and iii) the monetary value of the reduction in welfare experienced by the principal due to the divergence between the agent's decisions and those decisions which would maximize the welfare of the principal".

management) to run activities of the firms in the place of the principals (Jenson & Meckling, 1976). In this agency-principal relationship, Jenson & Meckling (1976) identify two major types of conflict of interests. First, there is a conflict of interest between managers and shareholders—which represents the goal incongruence between the managers, who need to maximize their own perquisites, and the shareholders, who need to maximize their own welfare (Jenson & Mekling, 1976; Harris & Raviv, 1991; Myers, 2000; Frank & Goyal, 2008). Second, there is a conflict of interest between debt holders and shareholders—which occurs when shareholders or their representatives tend to transfer wealth from debt holders to shareholders (Jenson & Meckling, 1976; Harris & Raviv, 1991; De Jong & van Dijk, 2001; Myers, 2001; Myers, 2002).

In short, the optimal capital structure of firms can be explained as balancing the benefits of debt financing for reducing the agency cost problems related to the conflict of interests between managers and shareholders (Jenson & Meckling, 1976; Jenson, 1986; Harris & Raviv, 1990; Stluz, 1990) and the agency costs of debt financing that emanate from the conflict of interests between debt holders and shareholders (Jenson & Meckling, 1976; Myers, 1977; Harris & Raviv, 1990; Stluz, 1990).

2.2.2.1. Conflict of Interests between Shareholders and Managers

In the agency-principal relationship of corporate firms, the conflict of interests between shareholders and managers are manifested in many ways. Firstly, as pointed out earlier by Jenson & Meckling (1976), managers prefer to have greater perquisite level and lower effort level. In analyzing such agency costs of equity rooted in the conflict of interests between shareholders and managers, Jenson & Meckling (1976) compare the behavior of managers in wholly owner-manager

firms and managers of firms who have fractional interest in the ownership of firms. In the presence of managers who have fractional interest in the ownership of firms and are responsible for directing firms' activities, the agency costs of equity will materialize (Jenson & Meckling, 1976). Specifically, managers tend to transfer resources of firms as a perquisite for a self-serving bias, invest less effort in searching promising investment projects and in avoiding dealing with the related demands of adapting a new product/service (Jenson & Meckling, 1976; Harris & Raviv, 1991). Secondly, managers may prefer short-term projects to more profitable long-term projects (Masulis, 1988). In such a short-term tendency, managers may need to produce early results and enhance their reputation quickly (Prasad *et al.*, 2001). Thirdly, managers may prefer less risky investments and lower leverage to lessen the probability of bankruptcy (Hunsaker, 1999; Prasad *et al.*, 2001). Fourthly, managers and shareholders may also differ over a firm's operating decisions (Harris & Raviv, 1990; Stulz, 1990). In addressing such a conflict, Harris & Raviv (1990) explain that managers need to continue operations while owners look for liquidations (Harris & Raviv, 1991). Besides, Stulz (1990) also contends that managers tend to use the free cash flows to finance non-promising investment projects with a negative net present value (NPV). They deliberately ignore the dividend payment though appropriate (Stulz, 1990). Stulz (1990) termed such a managerial behavior "overinvestment". Then, according to Stulz (1990), the cost of overinvestment is defined as the expected cost to the shareholders that arises because management invest cash flows in excess of that is available to fund positive NPV projects in negative NPV projects.

Of the varied menu of solutions proposed to mitigate agency costs related to the conflict of interests between managers and shareholders, the use of debt financing may be prominent[7]. For instance, Jenson & Meckling (1976) have point out the benefits of the increased use of debt financing to reduce such costs of agency problems. To be specific, Jenson & Meckling (1976) argue that, for the constant ownership interest of managers in a firm, increasing the use of debt to finance investment opportunities will increase the ownership interest of management and the gain from returns of investment. In effect, it reduces agency costs from the conflict of interests between shareholders and managers (Harris & Raviv, 1991).

Jenson (1986) also maintains that these agency costs will be severe in firms with high free cash flows. More specifically, Jenson (1986) argues that in the presence of excess cash flows, managers will have ample resources at their disposal for using as perquisites and organizational inefficiencies. Managers may also tend to use the available free cash flows in value-decreasing projects (Stulz, 1990). Jenson (1986) and Stulz (1990) explain that the increased use of debt financing helps to discipline the managerial behavior. In particular, they commit the use of free cash flows to meet maturing debt obligations, at least to show their efficiency (Harris & Raviv, 1991; Roshan, 2009)[8]. Hence, this use of debt financing as the monitoring mechanism (Jenson & Meckling, 1976) to reduce the agency costs of free cash flows is taken to be the benefit of borrowing to be tradeoff with any agency costs of debt to arrive at the optimal capital structure (Jenson, 1986; Stluz, 1990;

[7] Other mechanisms to minimize these conflict of interests include the use of incentive-performance compatible managerial contracts (e.g., managerial shareholding), use of internal monitoring (e.g., monitoring by board, large shareholders) and external monitoring mechanisms (e.g., corporate takeovers), and government regulation (Jenson & Meckling, 1976; Shleifer & Vishny, 1989).

[8] Jenson (1986) defines free cash flows as "the cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital".

Harris & Raviv, 1991). However, Jenson (1986) indicates that the benefits of debt financing for reducing the agency cost problems are not one-size-fits-all. Specifically, the reduction of agency costs of cash flows from the increased use of debt financing works well in firms having excess free cash flows and low growth opportunities (Jenson, 1986).

It has been also pointed out in the literature that the increased use of debt financing will force the liquidation of a firm and reduce the conflict of interests between the shareholder and manager over a firm's operating decision (Harris & Raviv, 1990; 1991). They argue that the increased use of debt financing will increase the probability of default and provide a sound base for the investors to force their liquidation needs (Harris & Raviv, 1990; 1991).

2.2.2.2. Conflict of Interest between Shareholders and Debt Holders

The agency cost of debt that emanates from the conflict of interest between the shareholders and debt holders has also been considered in explaining the capital structure decision of firms (Jenson & Meckling, 1976; Myers, 1977). In the conflicts between the shareholders and debt holders, the share holders or their representatives tend to transfer wealth from debt holders to shareholders. As a matter of fact, mainly three possible forms of conflicts between shareholders and debt holders have been identified in extant literature. These include (i) direct wealth transfer (Smith & Warner, 1979; De Jong & van Dijk, 2001), (ii) asset substitution (Jenson & Meckling, 1976) and (iii) underinvestment (Myers, 1977; Stulz, 1990).

In a direct wealth transfer, shareholders or managers (as their representatives) tend to pay cash as dividend to shareholders and issue debts with high priority (Smith & Warner, 1979; De Jong & van

Dijk, 2001). If debts have been priced assuming that the firm will not issue additional debt instruments, the value of the existing debt will decline. This is particularly true, if a newly issued debt has higher priority (Prasad *et al.*, 2001). In the risk shifting incentive or assets substitution, the share holders tend to invest in highly risky projects rather than in the current less risky project (Jenson & Meckling, 1976). This tendency of shareholders is to maximize their own returns when the investment turns out to be successful (Jenson & Meckling, 1976). On the other hand, they transfer loss to debt holders when investment fails (Jenson & Meckling, 1976; Harris & Raviv, 1991). This tendency of shareholders is due to the limited liability feature of corporate firms (Jenson & Meckling, 1976; Harris & Raviv, 1991). According to Myers (1977), underinvestment occurs when shareholders tend to restrain the use of new equity funds to finance promising investment opportunities. On the other hand, shareholders may prefer to reject investments with low risk and low positive NPV that may favor debt holders (Myers, 1977; Prasad *et al.*, 2001). Rather, they may favor investment with high risk and high NPV projects (Myers, 1977; Prasad et al, 2001). This tendency mainly occurs when firms are highly expected to be bankrupt in the near future (Myers, 2001). This tendency is due to the expected higher benefits that debt holders, as first claimants, gain from safe positive investment, rather than shareholders, as residual claimants. From a different view, Stulz (1990) contends that the excessive use of cash flows to service debt commitments to reduce overinvestment would results in underinvestment due to low cash flows available for funding of value increasing opportunities. Besides, the information cost incurred to ensure a firm is at default and force liquidation conceived to be the cost of debt (Harris & Raviv, 1990; 1991).

However, in the rational expectations, debt holders anticipate possible direct wealth transfer, risk-shifting incentives of shareholders and underinvestment (Jenson & Meckling, 1976). Hence, debt holders react to such a tendency of shareholders or their representatives by adjusting the prices or conditions of the firm's debt instrument (Jenson & Meckling, 1976; Prasad *et al.*, 2001)[9]. They may pay less or demand a higher premium for the firm's debt instrument (Jenson & Meckling, 1976; De Jong & van Dijk, 2001). The possible risk-shifting and underinvestment incentives of shareholders will exist as long as the gain from transfer of wealth of debt holders exceeds the decline in value from their engagement in risky projects (Harris & Raviv, 1991). As a result, in the agency cost tradeoff model, firms tend to balance the benefits of debt for reducing the agency cost problems and agency cost of debt (Jenson & Meckling, 1976; Harris & Raviv, 1991).

Then, in the static tradeoff theoretical models, the target capital structure of firms would be determined by balancing the benefits of debt financing with costs of debt financing (Myers, 1984). Specifically, the target capital structure of firms occurs at the point where the marginal benefits of tax shields and reduction of agency cost problems equal the marginal costs of distress and agency costs of debt (Brewer *et al.,* 2008). However, at any given point of time, the capital structure of firms may not be at the optimum due to the possible adjustment costs. Rather, in a continuous time framework, the capital structure of firms may deviate from the target capital structure and tend to adjust toward it through time (Myers, 1984). This dynamics of the target capital structure

[9] As the remedial for agency costs of debt, different studies proposed some features of debt contract: use of covenant (Smith & Warner, 1979), convertible debt and warrant (Jenson & Meckling, 1976; Green, 1984), use of collaterals (Stulz & Johnson, 1985, cited in Harris & Raviv, 1991). Besides, Diamond (1989) and Hirshleifer & Thakor (1989) also conjectured reputation concern of managers or firms as the moderator of agency costs of debt in the form of asset substitution (Harris & Raviv, 1991).

adjustment of firms has been explained based on the target capital structure adjustment or the dynamic tradeoff theoretical model (Fischer *et al.,* 1989; Leary & Roberts, 2005).

2.2.3. Costly Adjustment (Dynamic Tradeoff Theory)

Theoretical literature on the dynamic capital structure comes along two main routes. In the first route of theoretical literatures (Brennan & Schwartz, 1984; Kane *et al.*, 1984; Leland, 1994), the dynamics of capital structure of firms have been examined in a continuous time framework that balances taxation and costs of bankruptcy, allowing uncertainty to address the dynamism (Frank & Goyal, 2007). Particularly, considering both corporate and personal tax and bankruptcy costs, Kane *et al.* (1984) argue that unleveraged capital structure is suboptimal. This is because the marginal bankruptcy cost of unleveraged is always zero, while the firm has opportunity cost for a positive net tax advantage (Kane *et al.*, 1984). In this regard, Kane *et al.* (1984) used the flow measure of advantage to leverage, in contrast to its static stock measure, and then they specified a dynamic model. Hence, in capital structure dynamics, Kane *et al.* (1984) infer that firms periodically rebalance the debt ratios optimally. In a dynamic framework, Brennan & Schwartz (1984) also examined the optimal capital structure choice of firms both in the absence and presence of corporate tax. In its absence, Brennan & Schwartz (1984) documented that the firms' optimum capital choices depend on profitability. In its presence, they also indicated that the firms' value and growth rate would be below the no-tax situation. Brennan & Schwartz (1984) also revealed debt indentures as the boundary conditions for the values of the debts and equity claims. However, these explanations did not consider the possible transaction costs which may induce lags in the target adjustment (Frank & Goyal, 2007; Halling *et al.*, 2011).

In the second route, theoretical models of the dynamics of capital structure are said to have begun by Fischer *et al.* (1989). They considered the transaction costs in their systematic explanation of the possible dynamism of the capital structure decision of firms (Frank & Goyal, 2007). In the existence of a recapitalization costs, Fischer *et al.* (1989) developed the dynamic optimal capital structure theoretical model. They pointed out the presence of large swings of optimal capital structure over the range of the upper and lower boundaries or "the range of capital structure inactivity" (Leary & Roberts, 2005). Firms tend to initiate adjustment to the initial level when capital structure reaches either the lower or upper boundary, on a "lumpy" basis (Fischer *et al.*, 1989; Leary & Roberts, 2005). This prediction has been extended by different scholars (Mauer & Triantis, 1994; Goldstein *et al*, 2001; Morellec, 2001; Hennessy & Whited, 2004; Moyen, 2004; Strebulaev, 2007; Titman & Tsyplakov, 2007)[10].

Therefore, in the target capital structure adjustment or dynamic tradeoff theory, the capital structure decision of firms can be explained, as a-two-steps procedure. Firstly, firms set the optimal or target capital structure by balancing the benefits of debt financing and the costs of debt financing. Secondly, they tend to adjust or rebalance their capital structure towards the target through time (Myers, 1984; Flannery & Hankins, 2007; Frank & Goyal, 2008). The speed of adjustment towards the target also depends on the adjustment costs and the costs of deviations from the target or benefits of adjustments towards the target (Flannery & Hankins, 2007). If the

[10] Notably, these scholars differ in their treatment of investment and then, cash flows to explain the dynamic tradeoff theory. For example, Goldstein *et al.* (2001) and Strebulaev (2007) treat investment and then cash flows as being strictly exogenous, while Mauer & Triantis (1994), Morellec (2001), Moyen (2004), Hennessy & Whited (2005) and Titman & Tsyplakov (2007) treat investment as being endogenous to financing decisions.

cost of adjustment by far exceeds the benefit of adjustment, firms may stay long perturbed from the optimum (Myers, 1984; Flannery & Hankins, 2007).

These theoretical predictions would have implications for the capital structure adjustment dynamics of firms. Firstly, the capital structure adjustment dynamics may be asymmetrical for overleveraged and underleveraged firms[11]. In adjusting towards the target, overleveraged or undercapitalized firms may rebalance their capital structure by issuing equity or debt repayment (Flannery & Hankins, 2007). On the other hand, underleveraged or overcapitalized firms may rebalance their capital structure by issuing debt or retiring equity (Flannery & Hankins, 2007; Byoun, 2008). Then, if the adjustment costs for issuance of equity securities differ from issuance of debt securities, the target capital structure adjustment may be asymmetrical for overleveraged and underleveraged firms (Byoun, 2008). Besides, the benefits of target adjustment of underleveraged firms(in the form of tax shield and reduction of free cash flow problems) of underleveraged firms may differ from the benefits of target adjustment of overleveraged firms(in the form reduction of cost of financial distress and agency cost of debt)(Flannery & Hankins, 2007; Drobetz *et al.*,2013). For this reason, the capital structure adjustment dynamics of leverage-increasing (underleveraged) firms and leverage-decreasing (overleveraged) firms would be asymmetrical (Flannery & Hankins, 2007).

Secondly, the target capital structure adjustment dynamics may be heterogeneous across firms. Firms may differ in their characteristics and hence face adjustment costs differently. Obviously,

[11] In the presence of adjustment costs, at any given time, the actual leverage of a firm may be above the target leverage (for overleveraged or undercapitalized firms) or the actual leverage of a firm may be below the target leverage (for underleveraged or overcapitalized firms).

Flannery & Hankins (2007) posited that adjustment cost depends on the firm's internal financing flexibility or constraint and cost of external financing. Thus, the difference of firms in their free cash flows or profitability that provides internal financing flexibility (Flannery & Hankins, 2007) and investments as the principal constraint (Myers, 1984) would induce heterogeneity in the adjustment dynamics (Flannery & Hankins, 2007). Moreover, different firms may have different degrees of access to capital market and may face cost of equity issuance resulting from information asymmetry differently (Myers, 1984; Flannery & Hankins, 2007). Due to this, in the presence of differences in firm characteristics, the target capital structure adjustment dynamics of firms may be heterogeneous (Flannery & Hankins, 2007; Dang *et al.*, 2012).

2.3. Pecking Order Theory

The pecking order theory relies on the market friction of information asymmetry to explain the capital structure decision of firms (Myers, 1984; Myers & Majluf, 1984). The pecking order theoretical model predicts a hierarchal financing choice of firms in their capital structure decision. More specifically, in the pecking order theory, firms prefer internally generated funds to external financing (Myers, 1984). Further, in external financing, firms prefer debt financing to equity financing in their capital structure decisions (Myers, 1984; Myers & Majluf, 1984).

Even though the predictions of the pecking order theoretical model have drawn attention after the seminal contributions of Myers & Majluf (1984) and Myers (1984), the origins of the pecking order hypotheses are dated back to the foundation study of Donaldson (1961). Donaldson (1961) investigated the financing behavior of large corporations. Donaldson (1961) found out managers'

preference for internal funds rather than for external financing. Firms use external financing only in the presence of pressing fund demands (Donaldson, 1961; Myers, 1984). Besides, in generating external funds, managers barely issue equity securities (Donaldson, 1961; Myers, 1984).

Consequently, in explaining this financing behavior of firms, Majluf & Myers (1984) and Myers (1984) considered the information asymmetry between managers ("insiders") and investors ("outsiders") and the resulting adverse selection costs. In this case, it is assumed that managers or "insiders" know best the true investment opportunities or the true value of their firms than investors or "outsiders" can do (Majluf & Myers, 1984). Thus, investors may be willing to buy at price lower than the true value of securities of firms (Harris & Raviv, 1991). This under-pricing of securities will be severe if firms issue securities to finance new investment projects (Myers, 1984; Majluf & Myers, 1984; Harris & Raviv, 1991). If this under-pricing of securities is higher, the transfer of wealth from the existing shareholders to new investors may be higher than the net present value (NPV) of investment projects (Myers, 1984). Managers, being assumed to act in the best interest of the existing shareholders, will reject investment projects (Majluf & Myers, 1984). This tendency of managers is also expected to hold even when the investment opportunity is promising with a positive NPV (Myers, 1984).

Therefore, to deal with problems of asymmetric information in the form of under-pricing and then underinvestment, firms may use financing instruments that incur lowest costs (Myers, 1984; Majluf & Myers, 1984). In this regard, the internally generated funds will incur lowest costs compared to external financing (Majluf & Myers, 1984). Compared to internal financing, costs of external financing include costs of under-pricing and costs of rejecting promising investment projects

(Majluf & Myers, 1984)[12]. Thus, the use of internal financing minimizes all these costs that result from external financing (Myers, 1984). In addition, in need of external financing, firms may issue riskless debt and then less risky debt securities rather than equity issuance (Majluf & Myers, 1984). Compared to equity financing, debt financings are relatively safe and incur lower costs of under-pricing (Majluf & Myers, 1984). Owing to this, firms may use hierarchical financing to minimize information asymmetry related costs (Majluf & Myers, 1984).

Myers (1984) coined the term "pecking order" for these hierarchical financing choices of firms. Specifically, Myers (1984) identified the following four important explanations of the pecking order theoretical model. First, to finance new investment opportunities, firms prefer internal financing to external financing (Myers, 1984). Second, despite the downward rigidity of dividends, firms tend to adjust their target dividend ratio to their investment plan (Myers, 1984; Prasad *et al.*, 2001). Third, in the presence of the unpredictable fluctuation of profitability or investment opportunities, the internally generated funds may exceed or fall below the desired investment outlay (Myers, 1984). Hence, in the presence of financial surpluses or when the internal cash flows exceed investment outlays, firms tend to pay off debt or invest in cash/marketable securities rather than retiring equity (Myers, 1984; 2000). In contrast, in the presence of financial deficit or when the desired investment outlay exceeds the internal cash flows, firms firstly tend to deplete the financial slack or its cash/marketable securities (Myers, 1984). Fourth, if the financial slack is fully depleted and the investment opportunities of firms are found to be promising, firms may use external financing (Prasad *et al.*, 2001). Then, in external financing, firms first prefer riskless debt, which is then followed by less risky debt and, finally, new equity securities (Myers, 1984). Unlike in the tradeoff

[12] It also includes costs of underwriting and administration (Majluf & Myers, 1984).

theory, there is no as such a target debt to equity ratio in the pecking order theoretical model (Myers, 1984). Rather, the observed leverage of firms reflects their cumulative requirement for external financing (Myers, 1984).

2.4. Theory of Bank Capital Regulation

Due to their pivotal role in an economy, unlike other corporate firms, the banking firms are the most regulated firms (Santos, 2001; Brewer *et al.*, 2008). Of the different regulatory tools on banking firms, the regulatory pressure on capital adequacy of banks is an importantly additional friction to explain the capital structure decision of banks (Marcus, 1983; Berger *et al.*, 1995).

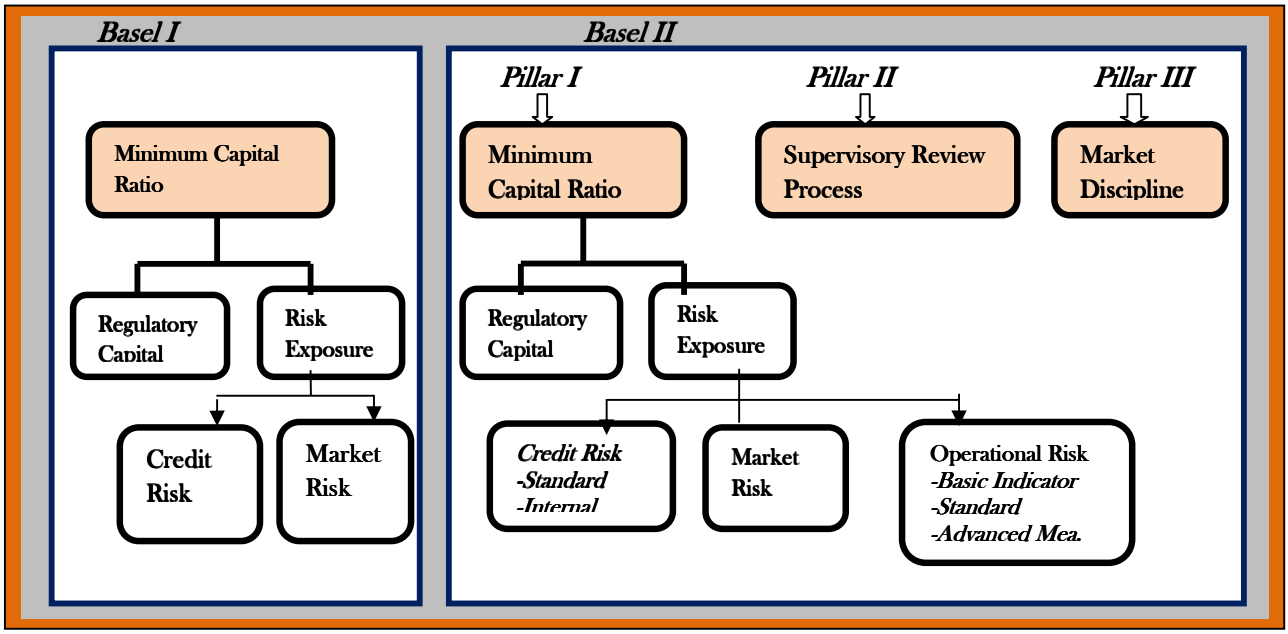
The two main theories that are found to explain the rationale for the capital requirement of banks are the "moral hazard" and "safety net" theories (Morrison & White, 2005). The "moral hazard" theory focuses on the incentives of shareholders or banks managers, who are assumed to act in the interest of shareholders, to invest in risky assets, in the absence of sufficient equity capital, so as to maximize their return at the expense of the depositors and other debt holders (Santos, 2001; Morrison & White, 2005). Though such an investment decision is optimal from the viewpoint of the shareholders, it is suboptimal from the social perspective (Morrison & White, 2005). This theoretical explanation is related to the rationale for regulation to deal with the corporate governance problems (Dewatripont & Tirole, 1993; Morrison & White, 2005) emanating from the separation of management and providers of funds, as well as to represent the uninformed, unsophisticated and largely dispersed depositors in the monitoring of banks (Wall & Peterson, 1996; Santos, 2001). The "safety net" theory indicates that the capital holdings of banks provide

cushion and solvency for depositors and other debt holders when loss occurs in banks due to a decline in the value of assets, as long as the claims of depositors and other debt holders do not exceed the capital of banks (Marcus, 1983; Morrison & White, 2005). This theory is also related to the view that the regulatory capital requirement helps to protect the soundness of the financial system and the real economy from the destructive effects of the contagious bank runs (Diamond & Dybvig, 1983; Berger *et al.,* 1995; Diamond & Rajan, 2000).

Thus, in light of these justifications, as part of the Bank for Internal Settlement (BIS), the Basel Committee on Banking Supervision published the Basel I "capital accord" in 1988. To be specific, the Basel I capital accord specifies the three-step procedures for regulating the capital adequacy of banks. Firstly, the Basel I capital accord specifies the minimum capital requirement to be held by the banks in order to minimize the costs to depositors if a bank goes bankrupt (Asarkayan & Ozcan, 2007). Specifically, this capital accord stipulates the minimum capital ratio requirement of 8%, which is computed as the "regulatory capital to risk weighted assets ratio". Secondly, the Basel I capital accord has clarified the definition of regulatory capital (Tier I and Tier 2). Finally, it lays down the standard to compute the regulatory capital ratio. In doing so, the accord groups assets into categories based on their risk, with the corresponding risk weights of 0% to least risky assets (e.g., Treasury bills) to 100% to most risky assets (e.g., commercial loans) (Park, 1994; Asarkayan & Ozcan, 2007). Because of its simplicity, the Basel I capital accord is mainly employed in developing countries, including Ethiopia. However, the Basel I accord has been criticized by different academicians and practitioners. As to the flaws of the Basel I capital accord, it has been argued, for example, that a cosmetic change in the capital ratio is possible to satisfy the regulatory standard without safeguarding losses to thee depositors (Wall & Peterson, 1994; Berger *et al.,*

1995). Thus, the Basel committee introduced the new capital accord, Basel II, in 2006. The Basel II capital accord has been proposed based on three pillars, encompassing the minimum capital requirement, the supervisory review process and adequate disclosure (Basel Committee on Banking Supervision, 2005). The Basel I and the Basel II capital accords can be compared as shown in Figure 2.1 below.

Figure 2.1. Comparison of Basel I and Basel II



As shown in Figure 2.1, the first pillar of the Basel II capital accord relates to the minimum capital requirement. Compared to the Basel I capital accord, the minimum capital ratio requirement of 8% remained unchanged in the Based II capital accord (Basel Committee on Banking Supervision, 2005). Besides, the definition of regulatory capital in Basel II remains the same with Basel I.

However, unlike the Basel I capital accord that focused solely on a credit risk[13], the minimum capital requirement in the Basel II capital accord is proposed to cover the credit risk, market risk and operational risk (Basel Committee on Banking Supervision, 2005). In addition, the computation of the credit risk in the Basel II capital accord had been extended. This second accord specifies the credit risk to be computed based on standard and internal rating methods (Basel Committee on Banking Supervision, 2005). Further, in computing the operational risk for capital requirement, three alternative approaches, including the basic indicator, standardized and advanced measurement approaches, have been proposed (Basel Committee on Banking Supervision, 2005). Hence, in comparing the first pillar of the Basel II and the Basel I capital accords, the regulatory capital remains unchanged but the measure of risk-weighted assets would be revised.

The second pillar of the Basel II capital accord relates to the supervisory review process (Basel Committee on Banking Supervision, 2005). It demands the banks' management of risk and capital, as stated in pillar I. It also defines the roles and powers of bank supervisors (Basel Committee on Banking Supervision, 2005). Its purpose is to promote the risk-monitoring process of the banks. The third pillar of the Basel II capital accord relates to market discipline (Basel Committee on Banking Supervision, 2005). It sets out the demand of banks for public disclosure. This pillar expects to provide enough information for market participants to evaluate the risk profile and capital holdings of banks (Basel Committee on Banking Supervision, 2005).

[13] Though later, the accord considered market risk that is expected to address interest rate risk and foreign exchange risk (Santos, 2001).

In light of the 2007 financial crises, the Basel II capital accord was found to be ineffective. This is because banks were found to be not well-capitalized. Owing to this, the Basel III capital accord has been introduced. This third accord includes some enhancements compared to the Basel II accord. The first of these enhancements is that the third accord demands more capital levels (Basel Committee on Banking Supervision, 2010). Second, the accord introduced more stringent guidelines for risk-weighted asset assessments (Basel Committee on Banking Supervision, 2010). Third, unlike the Basel I and the Basel II accords that focus on the risk of individual banks, the Basel III accord introduces standards to address systematic risk. In doing so, the Basel III accord introduces standards which include countercyclical buffers (Basel Committee on Banking Supervision, 2010).

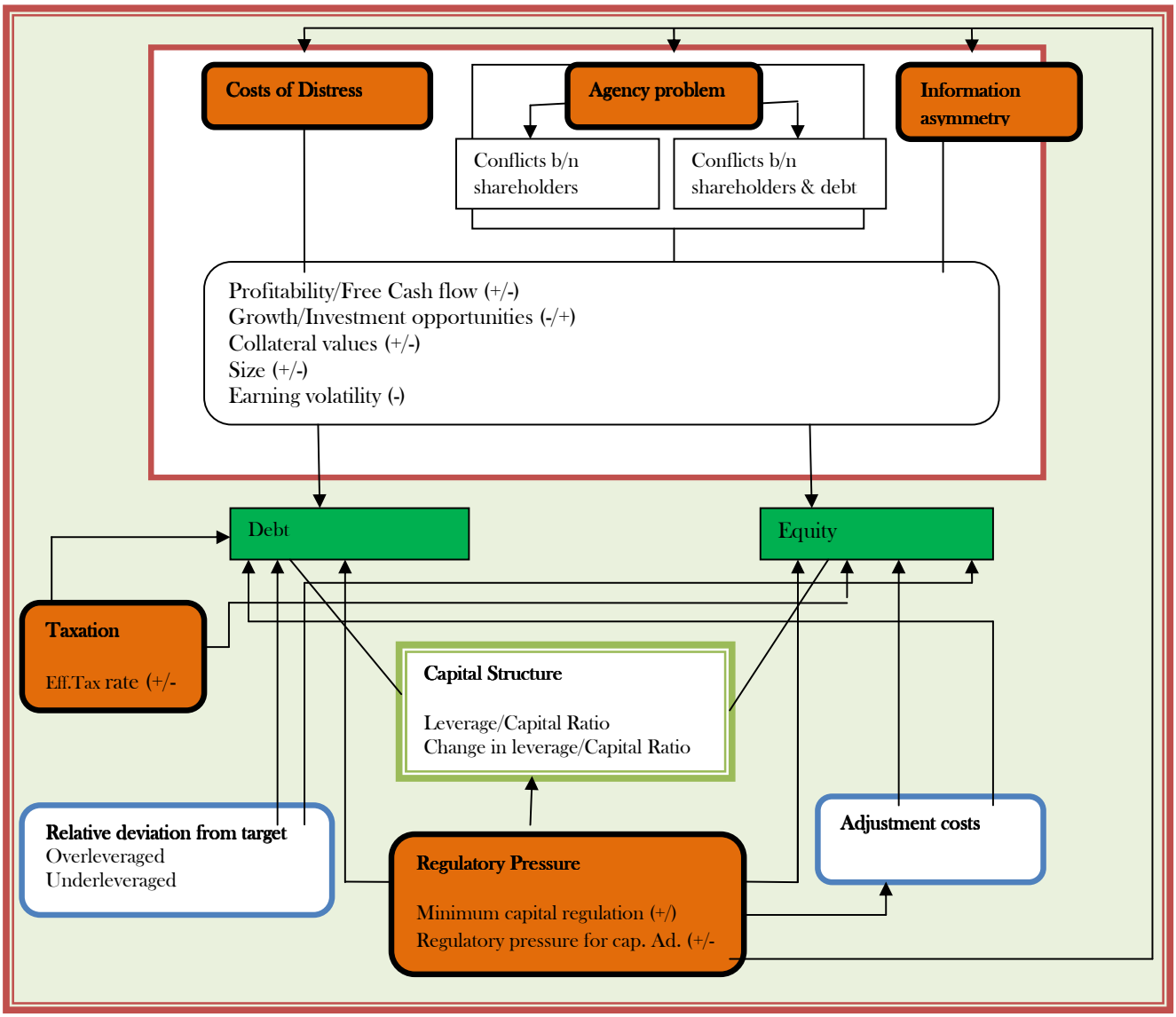
2.5. Summary

To sum up the review of theoretical literature on the capital structure decision of firms, the following points can be drawn. The modern theoretical explanation of the capital structure decision of firms dates back to the irrelevance proposition (Modigilani & Miller, 1958). However, the irrelevance proposition held only in the existence of perfect market assumptions. Hence, by relaxing the frictionless world of the irrelevance proposition, the two dominant theories of capital structure—tradeoff and pecking order theoretical models—have been developed.

Specifically, in the tradeoff theoretical models, the optimal or target capital structure of firms would be determined by balancing the cost of equity or benefits of debt financing (tax shields and reduction of agency costs problems) with the benefit of equity or costs of debt financing (costs of

distress and agency costs of debt) (Myers, 1984; Brewer *et al.,* 2008). However, at any given point in time, the capital structure of firms may not be at the optimum. Rather, in a continuous time framework, the capital structure of firms may deviate from the target capital structure and tend to adjust toward it through time (Myers, 1984). These dynamics of the target capital structure adjustment of firms have been explained based on the target capital structure adjustment or dynamic tradeoff theoretical model (Myers, 1984; Fischer *et al.,* 1989; Leary & Roberts, 2005; Flannery & Hankins, 2007; Frank & Goyal, 2008). The speed of adjustment towards the target is, in turn, predicted to be dependent on the adjustment costs and costs of deviations from the target or benefits of adjustment towards the target (Flannery & Hankins, 2007). In contrast, unlike the tradeoff theory, the pecking order theory explains the capital structure decision of firms as the cumulative result of hierarchical financing. The tradeoff and pecking order theoretical models explain why the capital structure decisions of firms are relevant in any corporate firms. However, unlike other corporate firms, banking firms are also regulated in their capital holdings. Hence, the capital structure decisions of banks may be explained based on the factors predicted in the tradeoff and pecking order theories and additional factors of capital regulation (Berger *et al.*, 1995; Brewer *et al.*, 2008), as shown in Figure 2.2 below.

Figure 2.2. Theoretical/Conceptual Framework



Note: -/+ indicates a prediction of expected negative/positive relations with the Leverage/Capital ratio

CHAPTER THREE: EMPIRICAL LITERATURE

3.1. Introduction

Following the predictions of theoretical models, voluminous empirical studies on capital structure decision of firms have been documented for the past periods. These empirical studies have come along two main strands. That is, empirical studies which emphasize on the determinants of cross sectional variations of capital structure across firms in static framework and which focus on the dynamics of capital structure adjustment. However, these studies have been conducted focusing mainly on nonfinancial firms, excluding banks and other financial firms. The argument for their exclusion is that, as indicated earlier in Chapter 1, banking firms differ from other corporate firms in source of funds, relatively highly leveraged and regulated (Baranoff *et al.,* 2008). Banking literatures primarily focus on regulatory forces rather than factors in corporate capital structure theoretical models (Gropp & Heider, 2009). However, despite these limitations, empirical studies are conducted to investigate determinants and dynamics of capital structure of banking and other financial firms.

Thus, this chapter constitutes the reviewed empirical literatures organized into three sections. The next section (3.2) presents empirical literatures reviewed on determinants of capital structure. Section 3.3 encompasses studies reviewed on dynamics of capital structure documented in both nonfinancial firms and banking firms operating in both developed and developing countries. Finally, section 3.4 concludes by reviewing the empirical studies and by pointing out gaps identified in the literatures reviewed.

3.2. Evidences on Determinants of Capital Structure

Different empirical studies on determinants of capital structure examined cross-sectional variations of leverage (or capital ratio) across firms based on the factors such as tax shield, cost of financial distress, agency costs and information asymmetry costs predicted in tradeoff and pecking order theoretical models. As different costs and benefits of debt and equity financing predicted in theoretical models are expected to differ in characteristics across firms, empirical studies use different firm characteristics as proxy for factors predicted in theoretical models (Frank & Goyal, 2004; Tan, 2010). However, regulatory pressure factors have also been considered in studies which focus on capital structure decision of banking firms. This section constitutes the review of existing evidences on determinants of capital structure documented in nonfinancial and banking firms.

- **Taxation**

In tax shield-cost of distress theoretical model, firms tend to increase debt financing to take benefit of tax shield of interest payment (Modigilani & Miller, 1963). Hence, past empirical studies on capital structure determinants of non-financial firms examined the effect of tax shield of debt on leverage. Past studies on non-financial firms of developed countries (MacKie-Mason, 1990; Shum, 1996) examined the relationship between tax rate and leverage; consequently, they found a significant effect of marginal tax on capital structure decision of firms (Abor, 2008). Survey studies done on non-financial firms in US (Graham & Harvey, 2001), UK (Brounen *et al.*, 2006; Beattie *et*

al., 2006; Archbold & Lazirdis, 2010), and selected European countries[14] (Bancel & Mitto, 2004) found tax shield of debt as one of the important or very important factor to be considered in their capital structure decision. These documented evidences are consistent with empirical studies conducted on banking firms of developed countries. Marcus (1983) examined the relations between tax shield disadvantage of equity and desired capital ratio of banks in US, and the result, in estimations, depicted that tax shield is significantly negatively related with capital ratio. Similarly, Hortuland (2005) provided evidence that corporate tax rate is negatively related with capital ratio of Swedish banks. Studying on Portuguese banking firms, Marques & Santos (2003) also predicted and found that tax economies of debt, rather than equity financing, as one of the important or very important internal factors to be considered in their capital structure decisions. However, Osterberg & Thomson (1996) confirmed a statistically significant negative coefficient of corporate tax rate on US banks. This finding contradicts the theoretical prediction and finding of Marcus (1983). Sharp (1995) revealed a statistically insignificant coefficient of effective tax shield in regressing against capital ratio of Australian trading banks.

In cross border transition of determinants, past studies also examined the effect of tax shield on capital structure decision of firms in developing countries. Focusing on non-financial firms in ten selected developing countries[15], Booth *et al.* (2001) investigated the relationship between average tax rate and leverage. Accordingly, they found a negative coefficient of average tax rate. This

[14] These European countries include Austria, Belgium, Greece, Denmark, Finland, Ireland, Italy, France, Germany, Netherlands, Norway, Portugal, Spain, Switzerland, Sweden and U.K.

[15] Selected developing countries include Brazil, Mexico, India, South Korea, Jordan, Malaysia, Pakistan, Thailand, Turkey and Zimbabwe.

contradicts the theoretical prediction. However, this finding was positive for three countries (Booth *et al.*, 2001). Similarly, Abor (2008) investigated the impact of tax shield of debt on capital structure decision of three groups of non-financial firms in Ghana. Consistent to the prediction, Abor (2008) found a positive relationship between effective tax rate and short term debt ratio of Small and Medium Enterprises (SMEs). Similarly, Amidu (2007) found statistically significant positive relations between corporate tax shield and leverage of Ghanaian banks. A survey study on banking firms in Nigeria, by Iwarere & Akinley (2010), also predicted and found that tax economies of debt, rather than equity financing, as one of the important or very important internal factors to be considered in their capital structure decisions. However, in contrast to the prediction, Abor (2008) found effective tax rate significantly negatively related to long term debt ratio of the quoted firms. Abor (2008) attributed this negative coefficient to the general tendency of the quoted firms to increase their equity financing to get listed and grab the special benefit of tax rebate (Abor, 2008). However, Chen & Strange (2006) found insignificant coefficient of corporate tax advantage in regressing against leverage of non-financial firms in China.

Based on the prediction of DeAngelo & Masulis (1980), different studies also examined non-debt tax shield as determinants. As a result, past studies on non financial firms of developed countries (MacKie-Mason, 1990; Wald, 1999; Ozkan, 2001; Song, 2005; Brinkhuis & Maeseneire, 2009) revealed significant relationship between non-debt tax shield and leverage. Similar studies (Céspedes *et al.*, 2009; Vasiliou & Daskalakis, 2009; Usman, 2014) also identified that non-debt tax shield is significantly related to leverage of non-financial firms in developing countries. However,

there are also empirical studies that found, in estimations, insignificant coefficient of non-debt tax shield (Titman & Wessels, 1988; Chen, 2004; Shah & Khan, 2007; Ramall, 2009).

- **Profitability**

In tradeoff model, highly profitable firms imply low probability of distress (Myers, 1984) and high free cash flow available for management expropriations (Jenson & Meckling, 1976; Jenson, 1986). Hence, they tend to increase debt financing to minimize tax payments from interest tax deductibility (Modigilani & Miller, 1963) and to discipline managerial behavior (Jenson, 1986) . In pecking order theory, however, highly profitable firms choose to finance investment opportunities through internally generated funds to minimize information asymmetry related costs (Myers & Majluf, 1984; Myers, 1984).

Thus, past empirical studies on determinants of capital structure of non-financial firms also identified profitability as determinant of their capital structure decision. Such studies examined the relationship between profitability and leverage of non-financial firms in developed countries (Fried & Lang, 1988; Titman & Wessels, 1988; Van der Wijst & Thurik, 1993; Ozkan, 2001; Bevan & Danbolt, 2002; Frank & Goyal, 2004; Song, 2005), and identified a negative relationship between profitability and leverage (Prasad et al., 2001). Similarly, Rajan & Zinglas (1995) investigated the relationship between profitability and leverage of non-financial firms in G-7 countries[16], and found a negative relationship between profitability and leverage of non-financial firms, except in Germany, in all G-7 countries. Kester (1986) and Hirota (1999) also documented similar negative result in non-financial firms of Japan. These evidences are generally consistent with the findings of

[16] The countries include USA, United Kingdom, Germany, Italy, France, Canada and Japan

survey studies of conducted on non-financial firms of developed countries. Survey studies performed on non-financial firms in US (Graham & Harvey, 2001), UK (Brounen *et al.*, 2006; Beattie *et al.*, 2006) and selected European countries (Bancel & Mitto, 2004) also identified financial flexibility or profitability as one of the important or very important factors to be considered in their capital structure decision. These evidences are also consistent with the documented evidences on capital structure decision of banking firms in developed countries (Sharp, 1995; Schaeuck & Cihak, 2007; Berger *et al.*, 2008; Flannery & Rangan, 2008; Brewer *et al.*, 2008; Gropp & Heider, 2009). Gropp & Heider (2009), for example, found a significant negative relationship between profitability and leverage of large banks in US and 15 European countries[17]. Studies conducted on the same large US banks over the same period (Berger *et al.*, 2008; Flannery & Rangan, 2008), banks of ten European countries (Schaeuck&Cihak,2007), Australian trading banks (Sharp, 1995), Germany banks (Kleff & Weber, 2004) and banks from twelve selected developed countries[18](Brewer *et al.*, 2008) also documented, in estimations, a positive relationship between profitability and capital ratio. Further, A survey study done on Portuguese banks (Marques & Santos, 2003) proved that profitability or financial flexibility and size of free cash flows are two of the most important factors that influence their capital structure decisions. However, Boucihina & Robeiro (2007) found profitability negatively related with capital ratio of banks in Portugal. Focusing on non-financial firms of Central and Eastern Europe, Cornelli *et al.* (1996) documented a positive relationship between profitability and leverage.

[17] European countries include Austria, Belgium, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Sweden

[18] The twelve developed countries include Australia, Canada, France, Germany, Ireland, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and United States

Past empirical studies on capital structure decision of firms also investigated the relationship between profitability and leverage of non-financial firms in developing countries (Booth *et al.*, 2001; Ignacio, 2002; Chen, 2004; Haung & Song, 2005; Abor, 2008; Céspedes et al., 2009). Some of these empirical studies conducted in selected developing countries (Booth et al., 2001), Uruguay (Ignacio, 2002), Ghana (Abor, 2008), China (Chen, 2004; Haung & Song, 2005), Pakistan (Shan & Khan, 2007) and on Ethiopian share companies (Usman, 2014) also found a negative relationship between profitability and leverage of non-financial firms. Generally, these studies provide evidences consistent with the predictions of pecking order theoretical model (Majluf & Myers, 1984; Myers, 1984). Similar evidences have also been documented by studies done on banks of developing countries (Kuo, 2000; Amidu, 2007; Octavia & Brown, 2008; Çağlayan & Sak, 2010; Mohammed *et al.*, 2015). Octavia & Brown (2008), focusing on banks of ten selected developing countries[19], found out a negative relationship between profitability and leverage. Similarly, significant negative relationship between profitability and leverage also documented by studies carried out on banks of Turkey (Çağlayan & Sak, 2010), Ghana (Amidu, 2007), Taiwan (Kuo, 2000) and Ethiopia (Mohammed *et al.*, 2015). Further, surveying financial managers of Nigerian banks, Iwarere & Akinley (2010) also disclosed profitability or financial flexibility and size of free cash flows as two of the most important factors that influence their capital structure decisions. However, other studies done on firms found in Libya (Buferna *et al.*, 2005) and Morocco (Achy, 2009) depicted profitability as positively related to leverage of firms. Further, Ramall (2009) found insignificant effect of profitability on capital structure decision of Mauritius firms.

[19] Selected developing countries include Brazil, Mexico, India, South Korea, Jordan, Malaysia, Pakistan, Thailand, Turkey and Zimbabwe

Growth Opportunities

In tradeoff theoretical model, high growth opportunities of firms imply high probability of bankruptcy and agency cost in the form of asset substitution (Jenson&Meckling,1976) and underinvestment (Myers, 1977). In pecking order theory, however, high growth opportunities of firms imply high fund requirements that exceed internally generated funds (Majluf & Myers, 1984; Myers, 1984).

Various empirical studies examined growth opportunities as one of the factors to be heeded for capital structure decision of non-financial firms in developed countries (Kester, 1986; Titman & Wessels, 1988; Rajan & Zinglas, 1995; Jordan *et al.*, 1998; Hirota, 1999; Bevan & Danbolt, 2004; Frank & Goyal, 2004). However, the documented evidences are found to be inconclusive. The studies conducted in US (Frank & Goyal, 2004), G-7 countries (Rajan & Zinglas, 1995 and Japan (Hirota, 1999) found a negative relationship between growth and leverage of non-financial firms. Bevan & Danbolt (2004) also found growth opportunities as negatively related with short term debt ratio of UK firms. Similar studies done on banks of US and 15 EU countries showed a negative relation between growth and bank leverage (Gropp & Heider, 2007). Survey studies carried out on capital structure decision of banks found in Portugal (Marques & Santo, 2003) and UK (Alfon *et al.*, 2004) also documented that investment policy or growth opportunity of banks is one of the important or very important internal determinants. Banks also tend to use equity financing in funding growth opportunities (Marques & Santos, 2003; Alfon *et al.*, 2004). Similar studies which have been done in US (Titman & Wessels, 1988), Japan (Kester, 1986) and UK (Jordan *et al.*, 1998), however, depicted a positive relationship between growth and leverage of non-financial firms. These findings are also consistent with the findings observed in US banks (Berger *et al.*,

2008) and in Australian trading banks (Sharp, 1995). Berger *et al.* (2008) and Sharp (1995) also found that growth is negatively related with capital ratio of banks.

In the same fashion, some empirical studies (such as Booth *et al.*, 2001; Chen, 2004; Huang & Song, 2005; Chen & Strange, 2006; Abor, 2008; Ramalla, 2009; Usman, 2014) also investigated the relationship between growth and capital structure choice of non-financial firms in developing countries. Consequently, the evidences identified are inconclusive. The studies carried out in ten selected developing countries (Booth *et al.*, 2001), Pakistan (Shah & Khan, 2007) and Libya (Buferna *et al.*, 2005) revealed the existing negative relationship between growth opportunities and leverage of non-financial firms. These evidences are also consistent with the results of the survey studies on banking firms (Wong *et al.*, 2004; Iwarere & Akinley, 2010). The survey studies conducted on banks of Honk Kong (Wong et al, 2004) and Nigeria (Iwarere & Akinley, 2010) found that growth is one of the important determinants of financing decision. Moreover, banks choose to issue equity financing to finance growth opportunities (Wong *et al.*, 2004; Iwarere & Akinley, 2010).

However, studies carried out on non-financial firms of Ghana (Abor, 2008), Moroccan non-listed manufacturing firms (Achy, 2009), and Chinese listed companies (Chen, 2004) found that growth opportunities of firms are significantly positively related to debt ratio. In the same market, Huang & Song (2005) and Chen & Strange (2006), consistent with the finding of Chen (2004), found a positive relationship between growth and leverage of Chinese firms. Similar studies conducted on Turkish banks (Çağlayan & Sak, 2010) and Ghanian banks (Amidu, 2007) witnessed a positive relationship between growth and leverage. But, there are still some empirical studies that proved

insignificant effect of growth opportunities on capital structure decision of firms. Of these studies, Ramlall (2009) and Usman (2014), focusing on non-listed nonfinancial firms of Mauritius and large tax payer share companies of Ethiopia, respectively, documented insignificant effect of growth opportunities on leverage. Octavia & Brown (2008) and Mohammed and his colleagues (2015), on banks of selected developing countries and Ethiopian banks, respectively, also found insignificant coefficient of growth in regressing against book leverage.

- **Tangibility/Collateral Value of Assets**

According to Rajan & Zinglas (1995), tangibility of assets represents the effect of collateral value of assets on capital structure decision of firms (Prasad et al, 2001). From available theoretical literature, the expected relationship between tangibility/collateral value of assets and leverage is debatable (Prasad *et al.*, 2001). In tradeoff theoretical model, high tangibility of assets of firms imply high liquidation value at the time of distress (Harris & Raviv, 1991) and low agency costs of debt in the form of asset substitution (Jenson & Meckling, 1976) and underinvestment (Myers, 1977). Grossman & Hart (1982), however, argued that agency cost of equity from conflict of interest between managers and shareholders will be higher for firms which have low level of assets to be used as collateral (Titman & Wessels, 1988; Prasad *et al.*, 2001). Hence, in tradeoff theoretical model, the relationship between collateral value of assets and leverage could be either positive or negative. In pecking order theory, high tangibility of assets of firms entail low information asymmetry related costs in external financing (Majluf & Myers, 1984; Myers, 1984).

Hence, past studies on determinants of cross-sectional variations in capital structure (for example, Fried & Lang, 1988; Titman & Wessels, 1988; van der Wijst & Thurik, 1993; Rajan & Zinglas, 1995; Jordan *et al.*, 1998; Hirota, 1999; Bevan & Danbolt, 2004; Frank & Goyal, 2004) also examined the relation between leverage and tangibility or collateral values of assets of non-financial firms in developed countries. However, these studies provide mixed evidences. Studies carried out in US (Fried & Lang, 1988; Frank & Goyal, 2004) and Japan (Hirota, 1999) found tangibility/ collateral value of assets as positively related to leverage of non-financial firms. Similar studies conducted on non-financial firms of G-7 countries (Rajan & Zinglas, 1995) and on UK firms (Jordan et al., 1998; Bevan & Danbolt, 2004) found a significant positive relationship between collateral values of assets and leverage. These evidences are also consistent with the results of studies conducted on capital structure of large US and European banks (Gropp & Heider, 2009). For both book and market leverages, Gropp & Heider (2009) found similar sign of coefficient of collateral value of assets and comparable magnitude to the finding of Rajan & Zinglas (1995). However, Cornelli and his colleagues (1996) in Central and Eastern Europe and Barton & Gordon (1988) in US confirmed a negative relationship between tangibility of assets and leverage of firms. Studies carried out by Titman & Wessels (1988) and Lowe and his associates (1994) on US non-financial firms and on Australian companies, respectively, in estimations, showed insignificant coefficient of collateral values of assets. Sharp (1995) also corroborated insignificant coefficient of collateral value of assets on Australian trading banks.

Past studies (such as Booth *et al.*, 2001; Ignacio, 2002; Chen, 2004; Buferna *et al.*, 2005; Shah & Khan, 2007; Abor, 2008; Céspedes et al., 2009; Usman, 2014) also investigated the relationship

between collateral values of assets and leverage of non-financial firms in developing countries. Accordingly, the findings of the studies carried out on non-financial firms of the ten selected developing countries (Booth *et al.*, 2001), Libya (Buferna *et al.*, 2005), Mauritius (Ramlall, 2009), Uruguay (Ignacio, 2002), China (Chen, 2004), Ghana (Abor, 2008), Pakistan (Shah & Khan, 2007), as well as on Ethiopian large share companies (Usman, 2014) revealed the existence of a positive relationship between collateral values of assets and leverage. These empirical studies are also found to be consistent with the evidences documented in empirical studies on banking firms of selected developing countries (Octavia & Brown, 2008). Octavia & Brown (2008) found a positive relationship between collateral values of assets and bank leverage[20]. Amidu (2007) also showed a positive relationship between asset structure and leverage of banks in Ghana. However, Kuo (2000) documented that collateral values of assets are negatively related to financial leverage of domestic public banks, domestic private banks and local branches of foreign banks in Taiwan. Similarly, Çağlayan & Sak (2010) and Mohammed *et al.* (2015) involving banks in Turkey and in Ethiopia, respectively, found tangibility as negatively related to bank leverage.

- **Size**

In tradeoff theoretical model, larger firms are expected to be relatively more diversified than smaller firms, which are expected to be less exposed to cost of bankruptcy and agency cost of debt (Titman & Wessels, 1988). Hence, size of firms is expected to be positively related with leverage or negatively with equity capital ratio. On the contrary, the larger the firm, the lesser the information

[20] Gropp & Hedier (2007) and Octavia & Brown (2008) define collateral values of assets as the ratio of tangible assets to total asset ratio under which tangible assets include total securities, investments in other entities, cash and due from banks (consisting of cash, interest and non-interest bearing interbank deposits, and interest and non-interest bearing balances with the central bank), and land and buildings. Thus, it is a better definition that reflects banking operations and asset holdings than definition employed by Kuo (2000) and Amidu (2007).

asymmetry costs will be (Frank & Hankins, 2007). Thus, in pecking order theory, larger firms can raise more external equity financing than their smaller counter parts.

To test these theoretical predictions, past empirical studies looked into the relationship between size and capital structure decisions of firms in developed countries (Barton & Gordon, 1988; Fried & Lang, 1988; Titman & Wessels, 1988; van der Wijst & Thurik, 1993; Lowe *et al.*, 1994; Rajan & Zinglas, 1995; Cornelli *et al.*, 1996; Jordan *et al.*, 1998; Hirota, 1999; Bevan & Danbolt, 2004; Frank & Goyal, 2004). Fried & Lang (1988) and Frank & Goyal (2004) revealed a significant positive relationship between size and leverage of non-financial firms in US. These evidences are also consistent with empirical evidences documented in US banks. Size is found to be significantly negatively related with equity capital ratio of largest banks in US over the same period (Berger et al., 2008; Flannery & Rangan, 2008). However, Marcus (1983) found unstable sign and insignificant coefficient of size in regressing against capital ratio of US banks[21]. Comparative studies which have been done on non-financial firms of G-7 countries (Rajan & Zinglas, 1995), and UK (Jordan *et al.*, 1998; Bevan & Danbolt, 2002; 2004) found a significant positive relationship between size and leverage. Similar studies done by Cornelli *et al.* (1996) and Hirota (1999) on nonfinancial firms of Central and Eastern Europe and of Japan, respectively, also revealed a positive relationship between size and leverage. These empirical evidences on nonfinancial firms of developed countries are also consistent with the documented evidences on capital structure decision of banks in developed countries. Focusing on larger banks found in US and EU countries, Gropp & Heider (2007) predicted and found a positive relation between bank size and

[21] But Marcus (1983) conduct the study based on the observed dramatic decline of capital ratio of US banks over the period of 1961(11.7%) to 1978(5.7%),

bank leverage. Besides, different studies carried out on banks of selected twelve developed countries (Brewer *et al.*, 2008), of European countries (Schaeuck & Cihak, 2007), of Spain (Ayuso *et al.*, 2004) and of Norwey (Lindquest, 2004) also found that size of banks, in estimations, is negatively related to capital ratio. However, Barton & Gordon (1988) found a negative relationship between size and leverage on US firms. Studies conducted on US firms (Titman & Wessels, 1998)[22] and on Australian firms (Lowe *et al.*, 1994) revealed an insignificant relationship between size and leverage.

Similar empirical studies also examined the relationship between size and leverage of non-financial firms in developing countries. Examining determinants of cross-sectional variations of capital structure of non-financial firms in selected developing countries (Booth *et al.*, 2001), in Uruguay (Ignacio, 2002), in Libya (Buferna *et al.*, 2005), in China (Huang & Song, 2005), in Ghana (Abor, 2008) and in Ethiopia (Usman, 2014), they found a positive relation between firm size and leverage. These findings are comparable and consistent with some recent studies conducted on capital structure of banks in developing countries. Octavia & Brown (2008), using fixed effect estimations, found that size is positively related to leverage of banks in selected developing countries. Similarly, in Taiwan, Kuo (2000) documented the existing significant positive relationship between size and financial leverage of domestic public banks, domestic private banks and local branches of foreign banks. Similar studies conducted on Ghanaian banks (Amidu, 2007), on Turkish banks (Çağlayan & Sak, 2010) and on Ethiopian banks (Mohammed *et al.*, 2016), in

[22] Titman&Wessels(1988) documented insignificant coefficient of size in estimations, except positively related with short term debt ratio of nonfinancial firms in US.

estimations, consistently found out that size of banks is positively related with leverage of banks. Wong *et al.* (2005) documented similar evidences that size of banks is negatively related with capital ratio of Hong Kong banks. However, in contrast to these empirical studies, studies carried out on Moroccan non-listed manufacturing firms (Achy, 2009) and on non-listed non-financial firms of Mauritius (Ramlall, 2009) found a negative relation between size and leverage. Involving non-financial firms of Pakistan and using fixed effect estimation, Shah & Khan (2007) found insignificant coefficient of size.

- **Risk**

In theoretical prediction, high variability in earnings of firms implies high probability of bankruptcy (Booth *et al.*, 2001). Besides, in the presence of high variability of earnings or risk of firms, it will be difficult for the investors to evaluate future prospects of firms. As a result, they may demand high premium which drives up the cost of debt (Prasad *et al.*, 2001).

Past empirical studies (such as Kester,1986; Barton & Gordon, 1988; Fried & Lang, 1988; Titman & Wessels, 1988; Kale *et al.*, 1991; Lowe *et al.*, 1994; Jordan *et al.*, 1998; Hirota, 1999) also investigated firm risk or earnings volatility as one of the determinants of capital structure of non-financial firms in developed countries; however, the studies provided contradictory results. Past studies that were done in US firms (Barton & Gordon, 1988; Fried & Lang, 1988; MacKie-Mason, 1990) and in Japan firms (Hirota, 1999) proved existing relationship between risk and leverage to be negative. These findings are consistent with results of empirical studies that were done on banking firms of developed countries. Among these, studies conducted on banks found in US (Marcus, 1983; Brewer *et al.*, 2008), selected European countries (Schaeuck & Cihak, 2007) and

Portugal (Boucihina & Robeiro, 2007) found that volatility of earnings or risk is positively related to capital ratio. Consistent with these findings, other empirical studies on banks in Spain (Ayuso *et al.*, 2004), in Norway (Lindquest, 2004) and in Central and Eastern Europe countries (Avack & Levasseur, 2007) documented that risk of banks is positively related with capital ratio. On the contrary, studies done on firms in Australia (Lowe *et al.*, 1994), US (Kim & Sorensen, 1986; Kale *et al.*, 1991) and UK (Jordan *et al.*, 1998) revealed a positive dependence between firm risk and leverage. In factor analytic of capital structure of US firms (Titman & Wessels, 1988) and in comparing US and Japan firms (Kester, 1986), they found, in estimation, insignificant negative coefficient of risk. But, survey studies done on non-financial firms in US (Graham & Harvey, 2001), UK (Beattie *et al.*, 2006), selected European countries (Bancel & Mitto, 2004), Portugal (Marques & Santo, 2003) and on banks in UK (Alfon *et al.*, 2004) documented volatility of earnings and cash flows as the important factor to be considered in their capital structure decision.

Moreover, empirical studies were conducted to investigate the relationship between earnings volatility or risk and leverage of firms in developing countries. In this regard, the study performed on Ghanaian non-financial firms (Abor, 2008) and on large tax payers of Ethiopian share companies (Usman, 2014) confirmed a negative relationship between risk or earnings volatility and debt ratio. In consistent with these results, other empirical studies conducted on banks found in Hong Kong (Wong *et al.*, 2005), Taiwan (Kuo, 2000) and on banking sectors in Turkey (Asarkayan & Ozcan, 2007) witnessed that risk of banks is either positively related with capital ratio or negatively related to financial leverage. However, contrary to the predictions, studies done on non-financial firms in selecting developing countries (Booth *et al.*, 2001) and in China (Chen & Strange, 2006) found significant positive coefficient of earnings volatility or risk. Further, similar

studies conducted in Pakistan (Shan & Khan, 2007), China (Chen, 2004) and Nepal (Baral, 2004) found insignificant coefficient of earnings volatility in regressing against leverage of non-financial firms. Similarly, Amidu (2007) and Mohammed *et al.* (2015), focusing on Ghanian banks and on banks of Ethiopia, respectively, found statistically insignificant positive risk coefficient in regressing against leverage in static framework. However, these findings contradicted the results of survey studies done on banks of Hong Kong (Wong *et al.*, 2005) and Nigeria (Iwarere & Akinley, 2010). These survey studies revealed volatility of earnings and/or risk and costs of distress as important factor in financing decision of banks (Wong *et al.*, 2005). Besides, they found high tendency of banks to use equity financing to complement risk management and to cushion unexpected losses or risks (Wong *et al.*, 2005).

- **Regulatory Pressure**

Due to their pivotal role in any economy, banking firms capital holdings are relatively more regulated than any other corporate firms (Santos, 2001). Hence, unlike studies on determinants of capital structure of non-financial firms, past studies on capital structure decision of banks (such as Marcus, 1983; Osterberg & Thomson, 1996; Lindquest, 2004; Hortuland, 2005; Berger *et al.*, 2008; Flannery & Rangan, 2008) examined the effect of regulatory pressure on their financing behavior. However, the studies found mixed results. The studies done on US banks (Marcus, 1983; Osterberg & Thomson, 1996) examined the relationship between regulatory pressure and capital ratio of banks. Osterberg & Thomson (1996) found that regulatory penalty for violating regulatory minimum was found to be a significant factor in capital structure decision of US banks. However, Marcus (1983) witnessed, in estimation, the insignificant positive coefficient of regulatory pressure. Similar evidences have also been documented by studies done on US banks (Berger *et*

al., 2008; Flannery & Rangan, 2008; Gropp & Heider, 2009). These empirical studies found no significant importance of regulatory factors for capital structure decision of banks in US, except for banks close to the minimum. Similarly, Hortuland (2005) found insignificant effect of regulation on leverage of Swedish banks. On the contrary, Lindquest (2004) revealed capital holdings of Norwegian banks as highly dependent on the need for avoiding falling below the regulatory minimum capital ratio and the presence of increased monitoring of regulators. On studies conducted on Australian trading banks, Sharp (1995) also found that regulatory factors including the deregulation and introduction of capital requirement are positively related to capital ratio. The survey studies performed by Marques & Santo (2003) and Alfon and his associates (2004) on banks found in Portugal and UK also confirmed the importance and/or very importance of regulatory factors in their capital structure decision.

Hence, past studies on capital structure decision of banks operating in developed countries examined regulatory factors though the results showed mixed evidences. However, the available few studies on banking firms of developing countries (such as Amidu, 2007; Çağlayan & Sak, 2010; Mohammed *et al.*, 2015) gave little attention mainly to the regulatory forces. But Octavia & Brown (2008) revealed the predominant role of regulatory capital requirement in determining capital structure of banks in selected developing countries. Similarly, Wong *et al.* (2005) found that capital requirement is positively related with capital levels of banks in Hong Kong.

Thus, evidences obtained from the past studies on determinants of capital structure of firms are summarized using the following points. With US origin, empirical studies conducted on

determinants of capital structure of firms in developed countries (Fried & Lang, 1988; Titman & Wessels, 1988; van der Wijst & Thurik, 1993; Rajan & Zinglas, 1995; Jordan *et al.*, 1998; Hirota, 1999; Graham & Harvey, 2001; Bevan & Danbolt, 2004; Frank & Goyal, 2004; Beattie *et al.*, 2006; Brounen *et al.*, 2006) seemed to converge on factors considered vital to examine capital structure decision of firms. These factors include tax shield of debt, profitability, growth opportunities, assets collateral value, firm size and earnings volatility/risk, among others. Besides, to examine the cross border transitions of determinants identified in firms of developed countries, past empirical studies focused on determinants of capital structure of firms in developing countries (Booth *et al.,* 2001; Ignacio, 2002; Chen, 2004; Buferna *et al.*, 2005; Huang & Song, 2005; Abor, 2008; Céspedes *et al.*, 2009). However, the findings are inconclusive. Mixed evidences, inconsistencies and contradictions have been documented. These inconsistencies could be attributed to the differences among institutional and legal framework of the countries considered (Booth *et al.,* 2001) and in methodologies applied (Marques & Santos, 2003). Besides, these studies gave little or no attention to heed banking and other financial firms in their study. Hence, there are scanty evidences to validate theoretical predictions in banking firms (Gropp & Heider, 2009). But, the available few recent studies on bank capital structure (Amidu, 2007; Çağlayan & Sak, 2010; Mohammed *et al.*, 2015) focus mainly on similar factors that are found to be relevant to explain the cross sectional variation of leverage of other corporate firms. Thus, these studies seemed to have neglected regulatory forces.

Further, these empirical studies on determinants of capital structure are mainly conducted in static framework. That is, these studies examined factors behind the cross sectional variations of the

observed leverage or capital ratio within static framework (Heishemti, 2001). Hence, these studies contradict the theoretical predictions of optimal leverage or capital ratio (Heishemti, 2001). This is particularly true in the presence of adjustment costs that could induce lags to adjust towards target leverage or capital ratio (Drobetz & Wanzedrid, 2006). Thus, the next section covers past empirical studies that examined capital structure decision of firms within dynamic framework.

3.3. Evidences on the Dynamics of Capital Structure Adjustment

In the absence of adjustment cost, target capital structure adjustment of firms would be instantaneous (Myers, 1984). In the presence of high adjustment cost, firms may experience long excursion from their target debt to equity ratio; however, in the presence of low adjustment costs, firms may tend to obtain their target in narrow interval (Myers, 1984). Such possible tendencies of firms have been theoretically explained by the pioneer work of Fischer *et al.* (1984). Besides, these theoretical predictions have also been the subject of past empirical studies. Thus, this section encompasses the review of major and relevant empirical studies on symmetrical and asymmetrical capital structure adjustment dynamics conducted on non-financial and banking firms.

3.3.1. Evidences on the Symmetrical Target Capital Structure Adjustment

There are sizeable numbers of empirical studies (such as Jalilivand & Harris, 1984; Ozkan, 2001; De Miguel & Pindado, 2001; Hovakimian *et al.,* 2001, 2004; Leary & Roberts, 2005; Flannery & Rangan, 2006; Lemmon *et al.*, 2008; Antoniou *et al.*, 2008; Huang & Ritter, 2009) proved the presence of target capital structure adjustment behavior of non-financial firms of developed countries.

Jalilivand & Harris (1984) investigated the target capital structure adjustment focusing on non-financial firms of US. They found significant speed of adjustment whereby firms adjust towards their target leverage around 56% per year. Hovakimian *et al.* (2001; 2004) and Leary & Roberts (2005) also documented empirical evidences that support the target capital structure adjustment of US firms in the long run and still prefer internal over external funds in the short run. Using the estimation of the partial adjustment model, Flannery & Rangan (2006) also found that US firms tend to revert towards long run target leverage at average speed of 35 % per year. Further, Lemmon *et al.* (2008) and Huang & Ritter (2009) also looked into dynamic capital structure adjustment of US firms using System GMM and long differentiating techniques, respectively. They subsequently found firms tend to adjust towards target capital structure at the average speed of 25% and 17% per year, respectively. These evidences suggest that the costs of deviation from the target or the benefits of reverting towards the target are significantly important for the US firms (Flannery & Hankins, 2007). These evidences are comparably equal to the documented evidences of target capital structure adjustment dynamics of banks in US (Marcus, 1983). Using random effect instrument variable estimator, Marcus (1983) revealed the speed of adjustment to be about 20% to 23.9% per year. However, during the observed high capital ratio of US banks in the 1990s, Flannery & Rangan (2008), using Instrumental Variable Estimator, found varied speed of adjustment of banks in sub periods that ranges from 29% to 74% per year. Similarly, Gropp & Heider (2009), using fixed effect estimator, revealed target capital structure adjustment of US and European banks at the average of 46.8% per year. These speeds of adjustments are even higher when compared to the evidences of the studies conducted on Australian trading banks (Sharp, 1995) and on twelve selected banks of developed countries (Brewer *et al.,* 2008). Sharp (1995)

found that Australian banks adjust slowly towards desired or optimal ratio at the rate of about 14.6 % to close the gap between actual capital ratio and the desired capital ratio in a given year. This rate of adjustment is even lower when compared to the findings of the study (Marcus, 1983) on US banks. Similarly, by examining dynamics of capital ratio of banks in twelve selected developed countries, Brewer *et al.* (2008) also proved low speed of adjustment towards target capital ratio in which average banking firms move 12% of their way towards the target or desired capital ratio on average in a given year.

Besides, Ozkan (2001) examined the target capital structure adjustment of UK firms. Using GMM estimator, Ozkan (2001) found target leverage adjustment of firms to be at an average speed of 44.3% per year. This evidence confirmed the findings of Panno (1996). Based on the Logit model estimation, Panno (1996) investigated target capital structure adjustment behavior of UK and Italian firms. Panoo (1996) then found the target capital structure adjustment tendency of UK firms. In such behavior, under-leveraged firms tend to increase leverage to attain the optimal capital structure (Panno, 1996). On the contrary, Italian firms failed to confirm the dynamic or target capital structure adjustment theoretical model (Panno, 1996). These evidences imply that UK firms at least equally considered both adjustment costs and costs of target deviation (Panno, 1996; Ozkan, 2001). In contrast to this, the cost of adjustment could be prohibitively high in Italian firms (Panno, 1996). However, the documented speed of adjustment in UK firms is low when compared to the results found on Spanish firms (DeMiguel & Pindado, 2001). Using the Difference GMM estimator, DeMiguel & Pindado (2001) found that firms in Spain have target leverage and revert towards it at speed of 79% per year. This high speed of adjustment, thus,

implies that the cost of adjustment is far lower than the benefit of adjustment or the costs of target deviation of firms in Spain. The cost of adjustment in Spanish firms is even lower when compared to firms in US. Similarly, Ayuso *et al.* (2004) found persistence in the capital buffers of Spanish banks due to short term adjustment costs. In GMM estimation, Ayuso *et al.* (2004) found Spanish banks adjust towards the target ranging between the rates of 57% to 73% per year. Once again, this evidence confirmed the documented high speed of adjustment in non-financial firms of Spain (De Miguel & Pindado, 2001). In the international setting, Antoniou *et al.* (2008) also examined the capital structure decision of firms in the five industrialized countries (G-5 countries). From these industrialized countries, Antoniou *et al.* (2008) choose US and UK with capital market based financial system and France, Germany and Japan with bank based financial system. In system GMM estimation, they found target capital structure adjustment behavior firms in all G-5 countries. However, Antoniou *et al.* (2008) documented mixed results regarding the speed of adjustment that ranges from 11% per year in Japan to 59.3% per year in France. Besides, the speed of adjustment of firms in Germany (23.6% per year) is comparably lower than the speed of adjustment of firms both in US (33.2% per year) and in UK (31.8% per year) (Antoniou *et al.*, 2008).

Hence, these past empirical studies generally support the target capital structure adjustment hypotheses; however they mainly focus on firms of developed countries. With regard to studies in developing countries, De Haas & Peeters (2004) investigated dynamic target capital structure

adjustment of firms in ten selected Central and Eastern European Countries[23]. Using non-linear square econometric technique, De Haas & Peeters (2004) found firms adjust towards their target at the average speed of adjustment 13% per year. It would then take around five years to close the gap between the observed and the target leverage of average firm. Similarly, Avack & Levasseur (2007) also witnessed target capital structure adjustment of banks in eleven selected Central and Eastern Europe countries. Studies conducted by Wong *et al.* (2005) and Asarkayan & Ozcan (2007) on banks of Hong Kong and Turkey banks showed the presence of lags in target capital ratio adjustment dynamics. Wong *et al.* (2005), using GMM estimation, revealed that target capital ratio adjustment of banks was, on average speed, 13.57% per year to close the gap.

Using system GMM estimator, Getsmann *et al.* (2010) also confirmed that Asian firms adjust towards their target leverage at the speed that ranges from 27% to 39%. This evidence may imply that adjustment costs of Asian firms outweigh benefit of adjustment or cost of deviating from the target. This speed of adjustment is lower when compared to the findings of the studies done on firms of Gulf of Cooperation Countries (Sbeiti, 2010). Sbeiti investigated dynamics of capital structure adjustment of firms in the Gulf of cooperation countries including Kuwait, Saudi Arabia and Oman, and the result showed target capital structure adjustment of firms. However, Sbeiti (2010) revealed mixed evidences, the rate of adjustment towards target book leverage ranges from 40% per year (lowest) in Saudi Arabia to 74% per year (highest) in Oman. Sbeiti (2010) further noted that the speed of adjustment towards target market leverage varies across these three countries, 65% per year in Kuwait to 79% per year in Oman. From the available few studies on

[23] The countries include Hungary, Latvia, Lithuania, Poland, Romania, Czech Republic, Estonia, Slovak Republic, Bulgaria, and Slovenia.

African market, Konan (2008) and Ngugi (2008) on Ivorian and Kenyan firms, respectively and Ezeoha & Botha (2012) on South African non-financial firms revealed the presence of the target capital structure adjustment behavior of firms.

In general, past studies on target capital structure adjustment dynamics of firms provide empirical support to the prediction of dynamic tradeoff theoretical model. However, these extant empirical literatures can be criticized by three perspectives. Firstly, these studies provide evidences mainly based on firms in developed countries. Thus, there are only few available evidences that try to address target capital structure adjustment of firms in developing countries. Secondly, the existing studies on target capital structure adjustment provide mixed evidences on the speed of adjustment. The findings differ from one country to the others. This may imply that both adjustment costs and benefits of target adjustment (or costs of target deviations) could be dependent on firms' financial, legal and institutional environment (Antoniou *et al.*, 2008; Öztekin & Flannery, 2011; Drobetz *et al.*, 2013). Thirdly, in testing the validity of target capital structure adjustment theoretical model, these past studies implicitly assume symmetrical target adjustment behavior or firm invariant. That is, they assume that all firms adjust towards the target with constant speed of adjustment. However, both adjustment cost and costs from target deviations may not be symmetrical for leverage increasing (under leveraged) and leverage decreasing (over leveraged) firms to re-balancing their capital structure (Flannery & Hankins, 2007; Byoun, 2008). Besides, adjustment costs during re-balancing may differ across firms with different characteristics (Cotei & Farhat, 2008). The pace of adjustment may be heterogeneous due to firms' heterogeneities (Drobetz & Wanzedrid, 2006).

Thus, the next sub-section covers the recent few empirical studies done on possible asymmetric target capital structure adjustment of firms (Byoun, 2008) and/or on heterogeneities in target adjustment of firms that differ in their characteristics (Drobetz & Wanzedrid, 2006; Flannery & Hankins, 2007; Elsas & Florysiak, 2011; Dang *et al.*, 2012; Faulkender *et al.*, 2012; Drobetz *et al.*, 2013).

3.3.2. Evidences on the Asymmetrical Target Capital Structure Adjustment

Unlike empirical studies on symmetrical target capital structure adjustment, few studies address cross-sectional heterogeneity on adjustment speeds of firms in developed countries (Drobetz & Wanzedrid, 2006; Byoun, 2008; Flannery & Hankins, 2007; Elsas & Florysiak, 2011; Dang *et al.*, 2012; Faulkender *et al.*, 2012; Drobetz *et al.*, 2013).

Byoun (2008) investigated the asymmetric capital structure adjustment of non-financial firms in US. The result showed that asymmetrical speed of adjustment was 33% per year for over leveraged firms, but 20% per year for under leveraged firms. Faulkender *et al.* (2012) also examined firm level heterogeneities in the form of target leverage deviation, cash flows, financial constraints, and market timing on the speed of adjustment (Elsas & Florysiak, 2011). The result documented that overleveraged firms generally adjust faster than underleveraged firms. Besides, Faulkender *et al.* (2012) also found that firm's costs of adjustment and costs of deviating from target (or benefits of adjustment) differ with its operating cash flow, investment opportunities and access to capital markets. In other words, firms with large operating cash flows adjust their leverage ratio more aggressively than the opposite (Faulkender *et al.*, 2012). This effect of operating cash flow is

particularly true for over-leveraged firms when compared to under-leveraged firms (Drobetz *et al.*, 2013). Further, Faulkender *et al.* (2012) documented that constrained firms adjust more slowly when they are under-leveraged, but more quickly when they are over-leveraged. Using dynamic paned data with fractional dependent variable (DPF) estimator, Elsas & Florysiak (2011) also examined possible cross-sectional heterogeneity on speed of adjustment of firms. The result confirmed that heterogeneity on the speed of adjustment is depending on the extent of financial deficits, firm size, growth opportunities, and industry classification. Berger *et al.* (2008) also examined possible heterogeneities on speed of adjustment toward target capital ratio of large banks in US. Using System GMM estimations, they documented that the speed of adjustment for poorly capitalized banks is about 20% to 45% higher than highly capitalized banks.

Besides, Dang *et al.* (2012) use a dynamic threshold panel data model of leverage to examine possible asymmetric adjustment speeds in UK firms. Accordingly, they found that the speed of adjustment of firms is dependent on financing imbalance, firm investment or earnings volatility but not on profitability and firm size. That is, firms with large financing imbalance (or a deficit), large investment or low earnings volatility have a significantly faster adjustment speed than those with the opposite characteristics (Dang *et al.*, 2012). By simultaneously endogenizing determinants of speed of adjustment and target leverage, Drobetz & Wanzedrid (2006) also examined possible cross-sectional heterogeneity of speed of adjustment in Swiss firms. Using GMM estimation, Drobetz & Wanzedrid (2006) proved high speed of adjustment in high growth firms and in firms that are highly deviated from target leverage. Using a wide range of different dynamic panel methodologies, Drobetz *et al.* (2013) also examined possible heterogeneities on target capital structure adjustment speeds on sample firms from the G-7 countries. They then revealed that highly over-leveraged

firms, firms with a higher financing deficit, and constrained firms adjust rapidly towards the desired capital structure. Further, Memal & Raupach (2007) and Lepetit *et al.* (2012) examined possible asymmetry and heterogeneities in speed of adjustment of banks in Germany and in selected Western European countries, respectively. Focusing on banks from seventeen selected Western European countries, Lepetit *et al.* (2012) examined possible asymmetry of bank's capital adjustment depending on ownership structure. They, then, in estimation, found that banks controlled by shareholders with equal voting and cash flow rights adjust their capital upward and downward at the same rate. However, with regard to banks controlled by shareholders with a gap between voting and cash flow rights, downward rate of adjustment is found to be higher than upward rate of adjustment (Lepetit *et al.*, 2012). Using discrete time series version of partial adjustment model, Memmal & Raupach (2007) investigated how banks in Germany adjust their capital ratio by allowing heterogeneous adjustment rate of each bank. They subsequently found that the general tendency of banks seeks to adjust towards target capital ratio. However, Memmal & Raupach (2007) confirmed more rapid speed of adjustment by relatively highly liquid banks and privately owned banks than by relatively illiquid banks and publicly owned banks.

Thus, the available few studies conducted so far to examine possible cross-sectional heterogeneities on speed of adjustment provide empirical support to dynamic tradeoff theory. Due to firm-specific adjustment costs, dynamic capital structure theory predicts heterogeneity on adjustment speed (Elsas & Florysiak, 2011). Firms facing different adjustment costs may take different paths towards their optimal capital structures (Fischer *et al.*, 1989; Leland, 1994; Dang *et al.*, 2012). However, these studies failed to refute context relevance of adjustment dynamics of capital structure of firms. But to the best of the researchers' knowledge, there is nearly no empirical studies so far that

explicitly examined possible asymmetrical and/or heterogeneous of capital structure adjustment of corporate firms in general and banking firms in particular operating in developing countries.

3.4. Conclusion

This chapter reviews the documented empirical literatures on determinants and dynamics capital structure of firms. The first sub-section mainly focuses on empirical literatures on determinants of capital structure of both non-financial firms and banking firms operating in both developed and developing countries. The second section mainly covers the reviewed documented evidences on capital structure adjustment dynamics. Thus, based on the reviewed empirical literature, the following five gaps in the literature have been identified:

Firstly, there are nearly no studies that explicitly test the possible heterogeneous adjustment towards target leverage or capital ratio of banking firms. Banking firms may differ in their characteristics and regulatory pressure for capital adequacy. In theoretical literatures, it is predicted that the capital structure adjustment dynamics depends on the cost of deviating from the target/ equilibrium capital structure and adjustment cost. Hence, firms having different characteristics may face adjustment cost differently and then, may tend to adjust heterogeneously.

Secondly, despite few studies on non-financial firms of developed countries, there are virtually no studies conducted to test hypothesis of asymmetric adjustment toward target leverage ratio of firms in developing countries. Extant empirical studies examined trade-off theory on the basis of symmetric adjustment costs and benefits; however, as indicated earlier, adjustment costs of

increasing and reducing leverage ratio may not necessarily be symmetric. Benefits of increasing leverage when firms are under-leveraged or over-capitalized may differ from that of reducing leverage when they are over-leveraged or under-capitalized.

Thirdly, equally important, this review has revealed symmetrical target capital structure adjustment as the major omissions from extant literatures of capital structure of firms in developing countries. There is considerable evidence to suggest that many firms have a target capital structure. In so far as this target may not be reached instantly, an adjustment mechanism which must be included within any capital structure model is applied. But, this issue has barely been tackled by the empirical literature on developing countries (Prasad *et al.*, 2001). Besides, the documented evidences revealed the inconsistencies in the speed of adjustment as the rate of adjustment is context dependant. The cost of deviating from target and cost of adjustments are highly affected by firms' institutional, legal and financial environment (Antoniou *et al.*, 2008). Hence, there is no evidence of symmetrical target capital structure adjustment of banking firms in Ethiopia which operate within institutional, legal and financial landscape that differs from other developing countries.

Fourth, despite the capacious past empirical studies on corporate finance centers regarding capital structure decision of firms, conundrum of capital structure decision of firms are still unresolved (Myers, 1984). That is, the question, 'what factors determine the capital structure decision of firms?', is still a mystery (Myers, 1984). This mystery on capital structure decision of firms clearly manifests lack of unequivocal evidences on determinants of capital structure of firms in developing countries. Further, on the top of this lack of indubitable evidences (Harris & Raviv, 1991),

prominent past studies on determinants of capital structure decision of banks mainly focused either on factors related to theoretical model (Gropp & Heider, 2009; Amidu, 2007; Mohammed *et al.*, 2015) or on regulatory factors (Ediz *et al.*, 1998; Rime, 2000; Furfine, 2000; Nachane *et al.*, 2001; Kuo & Lee, 2003). It is clear that, past studies that emphasize on capital regulation of banks contribute to our understanding of the relationship between capital regulation and banks' financing behavior. However, these studies conducted on banks that operate in regulatory environment are characterized by the presence of explicit deposit insurance (Sharp, 1995; Wall & Peterson, 1996). Hence, there is also lack of evidence on regulatory pressure regarding capital adequacy on capital structure of banks in developing countries operating in absence of secondary market and explicit deposit insurance.

Finally, there is a gap in the evidence on the validities of the theoretical models. As in the reviewed empirical literatures, tradeoff and pecking order theoretical models are primarily tested on firms operating in the context of developed countries, while little evidence is available in developing countries. This is particularly true for Ethiopian firms operating in financial system which are characterized as least developed and highly regulated. Hence, the current study tries to fill these gaps in literature by testing pecking order and tradeoff theories such firms found in one of the least developed countries context.

In order to fill the gaps identified in literature, the central question: "What factors determine the capital structure choice of banks and how do they adjust dynamically?" should be answered.

CHAPTER FOUR: HYPOTHESES FORMULATION

Based on the review of theoretical and empirical literatures, the study formulated six testable hypotheses. Like other corporate firms, banking firms use different financial instruments, which can be broadly categorized as debt and equity financing, to fund its operations. However, unlike other corporate firms, capital structure of banking firms is under the pressure of regulatory forces. Banks can then be characterized as any non-financial firms and regulated entities in their capital structure (Berger *et al*, 1995; Wall & Peterson, 1996; Brewer *et al*, 2008). The capital structure decision of banks in Ethiopia over the past periods (*see* Annex 1) may be related to the different factors predicted in tradeoff and pecking order theoretical models and the pertinent of regulatory pressures (Sharp, 1995; Wall & Peterson, 1996). In this regard, the first and the second testable hypotheses (null and alternative) of the study are formulated as follows:

Hypothesis 1:

- **H_{o1}:** *The corporate finance determinants of capital structure, including effective tax rate, profitability and/or size of free cash flows, growth opportunities, collateral values of assets, size, earnings volatility, and risk and costs of distress and insolvency, have no relationship with capital structure of banks.*

- **H_{a1}:** *The corporate finance determinants of capital structure, including effective tax rate, profitability and/or size of free cash flows, growth opportunities, collateral values of assets, size, earnings volatility, and risk and costs of distress and insolvency, have relationship with capital structure of banks.*

Hypothesis 2:

- **H_{o2}:** *The regulatory pressure on capital standard has no effect on capital structure of banks.*
- **H_{a2}:** *The regulatory pressure on capital standard has effect on capital structure of banks.*

The dynamic tradeoff theory or the target capital structure adjustment theory predicts that firms set long run target capital structure and tend to adjust towards it through time (Fischer *et al.*, 1989; Myers, 1984). In other words, firms set target capital structure at a point which balances benefits of debt financing (tax shield and reducing agency problems of free cash flows) and costs of debt financing (costs of financial distress and agency costs of debt) (Myers, 1984). In banking firms, possible regulatory costs are considered as additional cost to be tradeoff with the benefits of leveraging to obtain the optimal capital structure (Marcus, 1983; Osterberg & Thomson, 1996). However, at a given point in time, banks may not be at their target capital structure that balances marginal benefit with marginal costs of leverage due to possible lags in re-balancing towards the target in the presence of adjustment costs (Myers, 1984; Majluf & Myers, 1984; Marcus, 1984; Wall & Peterson, 1996; Wong *et al.*, 2005). In target adjustment, banking firms will substitute debt for equity financing or vice versa to obtain optimal capital structure. But, in the presence of adjustment costs, target re-balancing may not be instantaneous. Thus, if evidences on target capital structure adjustments further are to be corroborated, the predictions of target capital structure theory on the dynamics perspective or target capital structure adjustment theory need to be tested. This is particularly true for banks that operate in Ethiopian financial landscape. The possible target capital structure adjustment behavior of banks and the rate of adjustment (if any) also need to be

investigated. To this end, the study examined the possible symmetrical dynamics of the target capital structure adjustment, by testing the third null or alternative hypothesis formulated as read below:

Hypothesis 3:

- H_{o3}: *Banks do not have target capital structure to which they adjust dynamically.*
- H_{a3}: *Banks do have target capital structure to which they adjust dynamically.*

Besides, the target capital structure adjustment may be asymmetrical for overleveraged and underleveraged firms. In target re-balancing, over-leveraged (under-capitalized) firms will reduce their debt financing or increase their equity capital financing (Flannery & Hankins, 2007); however, underleveraged (overcapitalized) firms will increase their debt financing or decrease their equity capital financing (Flannery & Hankins, 2007). Thus, if the benefits of adjustment and costs of adjustment differ in reducing debt financing (or increase equity financing) and in increasing debt financing (or decrease equity financing), the dynamics of target adjustment is asymmetrical in overleveraged and underleveraged firms (Byoun, 2008). Further, due to firm-specific adjustment costs, target capital structure adjustment may be heterogeneous across firms that differ in characteristics (Drobetz & Wanzedrid, 2006). Given the gaps in the extant literature and in the institutional and regulatory frameworks of banks in Ethiopia, it is typical to examine the possible asymmetrical and/or heterogeneous target capital structure adjustment dynamics. In doing so, the fourth and fifth testable hypotheses (both null and alternative) are formulated as follows:

Hypothesis 4:

- H_{o4}: *Dynamics of capital structure adjustment is not asymmetrical in overleveraged and underleveraged banks in Ethiopia.*

- H_{a4}: *Dynamics of capital structure adjustment is asymmetrical in overleveraged and underleveraged banks in Ethiopia.*

Hypothesis 5:

- H_{o5}: *Dynamics of target capital structure adjustment is not heterogeneous across banks in Ethiopia which differ in their characteristics (deviations from target, size, growth, liquidity and ownership) and regulatory pressure.*

- H_{a5}: *Dynamics of target capital structure adjustment is heterogeneous across banks in Ethiopia which differ in their characteristics (deviations from target, size, growth, liquidity and ownership) and regulatory pressure.*

Finally, based on the comparisons of the test results for the predictions of the tradeoff and pecking order theoretical models, the study tests the sixth hypothesis formulated as:

Hypothesis 6:

- H_{o6}: *Capital structure decisions of banks in Ethiopia have no empirical support to extant theories (tradeoff and/or pecking order theories).*

- H_{a6}: *Capital structure decisions of banks in Ethiopia have empirical support to extant theories (tradeoff and/or pecking order theories).*

CHAPTER FIVE: RESEARCH METHODOLOGY

This chapter describes the research methodology of the study. Specifically, it describes the research approach/paradigm, research design, target population, units of analysis and samples, operationalization of constructs or measurements, methods of data collection and methods of data analysis employed in the study.

5.1. Research Approach and Paradigm

In examining the determinants of capital structure and the dynamics of the capital structure adjustment of banks, the study was conducted based principally on the quantitative research approach under the positivist paradigm. By employing the positivist research paradigm, the researcher aimed to find objective external realities about the factors or determinants of capital structure and the existing dynamics of the capital structure adjustment of banks (Williman, 2006; Cresweel, 2009; Bhattacherjee, 2012). On the contrary, the study has excluded the constructivist/interpretivist view that claims the world is socially constructed and subjective (Muijs, 2004; Cresweel, 2009; Bhattacherjee, 2012). This constructivist view implies that individual's choice of capital structure decisions is highly subjective (Cresweel, 2009; Saunders *et al.*, 2009). Understandably, in the positivist paradigm, the world is external and objective (Cresweel, 2009). Reality is real and it exists out there (Creswell, 2009). Hence, the chosen positivist research paradigm is in line with the aim of the study. Specifically, by examining relations, the researcher intended to explain why the capital structure choice and adjustment dynamics of banks is the way it is (Saunders *et al.*, 2009). In this regard, the study focused on deterministic relationships and looks

for factors determining or affecting the capital structure decision of the banking firms (Muijs, 2004; Williman, 2006; Cresweel, 2009). Besides, during the process, the study was primarily conducted in an objective and value-free manner (Muijs, 2004; Cresweel, 2009; Bhattacherjee, 2012).

Moreover, the study basically employed a quantitative research approach. A quantitative research approach is grounded in the positivist research paradigm (Muijs, 2004; Cresweel, 2009). Most specifically, the quantitative research approach is consistent with the ontological and epistemological orientation of the researcher for choosing the positivist paradigm (Muijs, 2004; Lancaster, 2005; Cresweel, 2009; Saunders *et al.*, 2009). On the basis of the chosen positivist paradigm/quantitative research approach, the researcher adopted the deductive reasoning to the research process (Lancaster, 2005; Saunders *et al.*, 2009). In doing so, the study has been guided by the theoretical/conceptual framework (as presented in the preceding two chapters) and numerical data were gathered and statistically analyzed so as to accept or reject the formulated hypotheses (Muijs, 2004; Cresweel, 2009; Saunders *et al.*, 2009; Bhattacherjee, 2012). The well-planned and-implemented quantitative research approach has the merit of being able to make generalizations for a broader population (Balnaves & Caputi, 2001; Saunders *et al.*, 2009; Vanderstoep & Johnston, 2009). However, a quantitative approach fails to provide the researcher with the information on the context of the situation, among other shortcomings. Hence, to enhance the generalizability and reliability of the findings of a quantitative approach, the study followed standardized procedures in sample selection, instrument designing, data collection and analysis (Balnaves & Caputi, 2001; Muijs, 2004; Lancaster, 2005; Saunders *et al.*, 2009).

5.2. Research Design

The study used the combinations of secondary data-based panel and cross-sectional field survey research designs.

The panel research design of the study is particularly imperative to investigate the determinants and dynamics of capital structure adjustment based on the panel data to be collected across banks over different time periods (Green, 2003; Gujariti, 2003; Gropp & Heider, 2009). Nowadays, a panel data set approach received more attentions from researchers (Heshimite, 2001). One compelling reason is that, unlike the cross-sectional or time series data, it allows to follow the same observational units repeatedly over time (Heshimite, 2001; Green, 2003; Gujariti, 2003). Hence, the availability of repeated observations on the same cross-sectional units ensures the viability of relatively more realistic models (Bjron & Friss, 2013). In addition, the panel data allow for controlling individual unobserved heterogeneity, which gives more variability and informative data (Green, 2003; Bjron & Friss, 2013). Further, unlike the cross-sectional survey design that collects data at a single point in time, the available panel data would capture the dynamic nature of a capital structure problem (Heshimite, 2001). However, there are also disadvantages induced by these panel data sets (Bjron & Friss, 2013). Firstly, observations may not be independently distributed across time (Verbeek, 2009; Bjron & Friss, 2013). Secondly, the panel survey design would be based on secondary accounting data analysis. Thus, this design may be criticized for the possible low quality of data, which may be collected unscientifically or unsystematically (Bhattacherjee, 2012). Moreover, the panel study could be limited to the variables available in secondary accounting data (Beattie *et al.*, 2006). Hence, it is difficult to passably test theoretical models from

different perspectives (DeJong &van Dijk, 2001; DeJong *et al.*, 2003; Beattie *et al.*, 2006; Bhattacherjee, 2012).

On the other hand, the cross-sectional field survey design would be useful to investigate the determinants of capital structure and dynamics of capital structure of banks based on the firsthand information to be retrieved through the survey instrument (Balnaves & Caputi, 2001). The use of the cross-sectional survey design would enhance the possibility to capture and control different factors predicted in the theoretical models, which will be, nevertheless, neglected in panel study (Bhattacherjee, 2012). However, unlike the panel research design, the cross-sectional field survey design may be criticized for lack of data to address the dynamic aspects of the capital structure problem (Heshimite, 2001). Moreover, in the cross-sectional survey design, low degree internal validities from the absence of temporal precedence and the possible respondent bias would be expected (Saunders *et al.*, 2009; Bhattacherjee, 2012).

Therefore, a combination of the panel and cross-sectional survey research designs would be highly useful. Specifically, these research designs would be complementary to each other and helpful to substantiate the possible findings (De Jong & van Dijk, 2001; De Jong *et al.*, 2003; Beattie *et al.*, 2006; Bhattacherjee, 2012). To that end, the following two subsections (5.2.1 & 5.2.2) describe the details of the secondary data-based panel and cross-sectional survey research designs of the study, respectively.

5.2.1. Secondary Data-Based Panel Research Design

The study uses the secondary data-based panel/longitudinal research design. Hence, this section describes the sampling design, measurements/operationalization, methods of data collection and methods of data analysis used for the secondary data-based panel research design of the study.

5.2.1.1. Target Population, Unit of Analysis and Sample

The unit of analysis of the study has been banks for longitudinal or panel design. The population of banks in Ethiopia constitutes three publicly owned banks and fifteen privately owned banks (*Annual Report of NBE*, 2012). The publicly owned banks include Commercial Bank of Ethiopia, Construction and Business Bank and Development Bank of Ethiopia. As per the report of NBE (2012), the privately owned banks comprise Awash International Bank, Dashen Bank, Bank of Abyssina, Wegagan Bank, United International Bank, Nib International Bank, Cooperative Bank of Oromia, Lion International Bank, Oromia International Bank, Zemen Bank, Buna International Bank, Birhan International Bank, Abay Bank, Enat Bank, and Debub Global Bank (*Annual Report of NBE*, 2012). Then, the target population of the study is defined as being comprised of all these eighteen banks which are registered as incorporated banks under the proclamations of NBE.

To obtain the sample of the study, three exclusion criteria have been used in line with the aim and objectives of the study. Firstly, from the publicly owned banks, both Commercial Bank of Ethiopia and Construction and Business Bank are deposit-taking banks and provide services in different

commercial activities. However, Development Bank of Ethiopia is the specialized government-owned bank in Ethiopia, which differs in the means of financing and mainly focuses on financing long-term public projects. Hence, as there are missing observations on specified variables, Development Bank of Ethiopia has been excluded from the sample. Secondly, unlike the long records of the public-owned banks in the history of banking in Ethiopia, private banks joined the banking industry in the post-deregulation at different points in time. Thus, due to the lag nature of the analysis of the study, private banks having less than three consecutive years of observations have been excluded. In this criterion, privately owned banks, including Abay Bank, Enat Bank and Debub Global Bank, have been excluded from the sample of study. Thirdly, due to the unavailability of panel data of banks during the period of before the year 2000 and due to the fact that most of private banks became fully operational after the year 1999, the sample constitutes banks operational in the post-1999 period [24].

As a result, the sample constitutes all selected fourteen commercial banks with a minimum three consecutive years of operations. All the selected banks are the registered incorporated banks under the proclamations of NBE and operational during the period between the years 2000 to 2012. Thus, there is the unbalanced panel data set of 124 observations.

[24] Though the requirement of full disclosure of banks and periodic reports of banks to the National Bank of Ethiopia (NBE) was proclaimed in year 1994, formal audited financial statements reporting to the NBE have been documented in the post-2000 period (Kiyota *et al.*, 2007).

5.2.1.2. Operationalization-Measurements of Variables in Panel Study

The study examined the determinants of the capital structure and capital structure adjustment dynamics of banks based on the factors predicted in the theoretical models of capital structure and the pertinent regulatory pressure on capital adequacy standards. Thus, this describes the operationalization of constructs or measurement of variables employed in panel design.

5.2.1.2.1. Dependent Variable: *Leverage*

The dependent variable in the panel design of the study is the leverage of banks. A clear definition of leverage has been debatable (Rajan & Zinglas, 1995). The choice of its definition depends on the purpose of the study (Rajan & Zinglas, 1995; Drobetz & Wanzedrid, 2006). In this study, ***Leverage*** (L_{it}) is defined as one minus the ratio of equity capital to total assets of banks in book values (Gropp & Heider, 2009; Çağlayan & Sak, 2010). Unlike the stochastic deposits, the capital ratio of banks is considered to be relatively controllable and subjected to regulatory forces (Santos, 2001). Besides, past studies on the capital structure of banks have usually used equity capital ratio as the proxy for capital structure (Marcus, 1983; Sharp, 1995; Brewer *et al.*, 2008). Thus, this definition of leverage will treat equity capital ratio in inverse relations. Higher equity capital ratio implies lesser leverage and vice versa. In addition, it enables to investigate the effect of regulation, while being consistent with the existing literature on nonfinancial firms that use leverage as the proxy for capital structure. In this definition of leverage, equity capital is the sum of paid up capital, reserves and retained earnings of a bank in period t, in book values. The use of book value of equity capital helps to deal with the problem of market value data unavailability in banks of

Ethiopia. Moreover, it is also suitable to use book value to be consistent with the regulatory requirement (Gropp & Heider, 2009).

5.2.1.2. 2. Determinants of Capital Structure

The determinants of capital structure are the expalanatory variables of the study. These include different bank characteristics (Gropp & Heider, 2009) and pertinent regulatory pressure for the capital adequacy of banks (Berger *et al.*, 1995; Sharp, 1995; Brewer *et al.*, 2008). The chosen bank characteristics used as the proxies for different factors predicted in the tradeoff and pecking order theoretical models include tax shield, costs of financial distress, agency costs and information asymmetry costs (Titman & Wessels, 1988; Rajan & Zinglas, 1995; Gropp & Heider, 2009). Moreover, the minimum capital requirement and peer-based regulatory pressure for capital adequacy were also selected as two pertinent regulatory factors for banks in Ethiopia (Marcus, 1983).

- ***Taxation***

In line with the prediction of the tradeoff theoretical model, the study investigated the effect of taxation on the capital structure decision of banks (Modigilian & Miller, 1963). In so doing, the study used effective tax rate (Marcus, 1983; Sharpe, 1995; Abor, 2008) as one of the explanatory variables of the study.

Effective Tax Rate - In tax cum-costs of financial distress tradeoff model, the increased use of debt financing rather than equity financing is expected to lower effective marginal tax rate on interest

deductions (Abor, 2008)[25]. Hence, effective tax rate is predicted to be positively related to leverage or negatively related to equity capital ratio. ***Effective Tax rate*** **(Tx_{it-1})** is defined as the lagged values of the ratio of tax paid to net income before tax (Sharp, 1995; Abor, 2008). Besides, if this ratio is found to be negative in value and value greater than 1, following previous studies (Fischer *et al.,* 1989; Sharp, 1995), effective tax rate is constrained to be zero. This helps to conform only to the economic relevance of the variable (Sharp, 1995; Gatward & Sharpe, 1996).

- **Costs of Distress, Agency Costs and Information Asymmetry**

In testing the factors predicted in the tradeoff and pecking order theoretical models, including costs of financial distress, agency costs and information asymmetry, the study also used bank characteristics, including profitability, growth opportunities, collateral values of assets, size and risk of banks, as the proxies for constructs predicted in the theoretical models (Titman & Wessels, 1988).

Profitability **–** The tradeoff theoretical model predicts a positive relationship between profitability and leverage or, equivalently, profitability is negatively related to equity capital ratio. Specifically, in the tax-cost of distress tradeoff theoretical model, high profitability of firms implies low probability of distress (Myers, 1984). Similarly, in the agency cost tradeoff model, high profitability leads to high agency problems of free cash flows (Jenson, 1986). Hence, highly profitable firms tend to increase leverage to tap the benefits of interest tax shield with low expected distress cost (Myers,

[25] Miller (1977) indicated that the tax advantage of debt rather than equity financing depends on the marginal personal tax rate, tax rate on capital gains and corporate tax rates. However, data on personal tax rate and capital gains are not available in banks of Ethiopia.

1984) and the disciplinary role of leverage in resolving free cash flow problem (Jenson & Meckling, 1976; Jenson, 1986). On the contrary, the pecking order theoretical model predicts a negative relationship between profitability and leverage. This prediction is based on the premise that profitable firms would prefer internal funds in the form of retained earnings to external financing through issuance of debt or equity securities to minimize information asymmetry-related costs (Myers, 1984; Majluf & Myers, 1984; Frank & Goyal, 2008). The prediction of the pecking order model is also reinforced by the legal reserve requirement that requires the transfer of 25% of the profitability of banks in Ethiopia to capital reserve (Directive No SBB /4/ 95 of NBE). ***Profitability*** **(Pf_{it-1})** is defined as the lagged ratio of earnings before interest and tax to total book values of assets (Titman & Wessels, 1988; Rajan & Zingales, 1995; Gropp & Heider, 2009).

Growth Opportunities - Succinctly, Frank & Goyal (2009) stated that high growth opportunities would imply high loss of values of firms at the time of distress, being highly prone to the agency costs of asset substitution (Jenson & Meckling, 1976) and underinvestment (Myers,1977) and facing low agency costs of free cash flows (Jenson, 1986). Hence, in the tradeoff theoretical model, high growth firms tend to hold less debt or high equity financing (Titman & Wessels, 1988). On the contrary, the pecking order theory predicts a positive relationship between growth and leverage or, it's being negatively related to equity capital ratio (Majluf & Myers, 1984; Myers, 1984). In this prediction, high growth opportunities of firms imply high demand of funds more than to be covered by internal sources (Myers, 1984). As a result, highly growing firms prefer debt over equity in external financing (Myers, 1984). ***Growth*** **(Gr_{it-1})** is defined as the lagged values of percentage

change in total assets of banks, in book values (Titman & Wessels, 1988; Sharp, 1995; Shan & Khan, 2007).

Collateral Values of Assets **-** In the tradeoff theoretical models, the relation between collateral values of assets and leverage can be positive or negative. In the positive prediction, high collateral values of assets of firms entail the expected low decline in the values of assets at the time of distress (Myers, 1984; Frank & Goyal, 2008; Cotie & Faraht, 2009). Furthermore, high collateral value of assets implies the increase in the difficulties of asset substitution or risk-shifting incentives of shareholders (Jenson & Meckling, 1976; Cotie & Faraht, 2009). Hence, in the presence of high collateral values of assets, firms expected to increase debt financing or decrease equity financing (Jenson & Meckling, 1976; Myers, 1984; Cotie & Faraht, 2009). On the contrary, in the presence of low collateral value of assets, shareholders may incur high monitoring costs to deal with the possible conflict of interest between managers and shareholders (Grossman & Hart, 1982; Titman & Wessels, 1988). In this respect, low collateral values of assets of firms imply a high level of gearing or leverage ratio (Grossman & Hart, 1982; Titman & Wessels, 1988; Prasad *et al.*, 2001). On the other hand, due to the expected low information asymmetry costs related with high collateral values of assets, firms can easily raise external financing in the form of debt (Titman & Wessels, 1988). By implication, the positive relationship between collateral values of assets and leverage would be expected in the pecking order theoretical models (Myers, 1984; Majluf & Myers, 1984; Titman & Wessels, 1988; Harris & Raviv, 1991; Frank & Goyal, 2008). ***Collateral values of***

assets **(*Col_{it-1}*)** is defined as the lagged values of the ratio of tangible assets to total assets in book values (Octavia & Brown, 2008; Gropp & Heider, 2009)[26].

Bank Size **-** In a tradeoff theoretical model, bank size is predicted to be positively related to debt financing or negatively related to equity capital ratio. In the tax cost of distress model, larger firms are considered to be more diversified and less exposed to the probability of bankruptcy (Titman & Wessels, 1988; Rajan & Zinglas, 1995). In the agency cost tradeoff theoretical model, larger firms are expected to be matured and build reputations and hence face low agency costs of debt (Hirshleifer & Thakor, 1989). These lower costs of distress and agency costs of debt encourage the larger firms to use more debt than equity in their financing choices (Titman & Wessels, 1988). Further, due to diversification possibilities and their being better known in the market, larger firms imply lower information asymmetry problems (Myers, 1984). In effect, large firms can raise debt financing more easily than their smaller counterparts (Titman & Wessels, 1988). ***Bank Size*** **(*$Ln(Sz_{it-1})$*)** is defined as the lagged natural logarithm of book value of assets (Titman & Wessels, 1988; Gropp & Heider, 2009).

Risk **-** In both the tradeoff and pecking order theoretical models, the relationship between firm risk and leverage is predicted to be negative. In the tradeoff model, higher earnings volatility implies

[26] Even though banks are not supposed to pledge collaterals to raise debt financing from deposits, they need collaterals to raise debt financing from central banks and/or interbank borrowing. Hence, there is a need to include the variable if it truly affects their capital structure decision. However, to better capture the banking operations, the study also alternatively tested by defining collateral values of assets as the ratio of tangible assets to total asset ratio under which tangible assets consist of fixed assets (land &building) and liquid securities that will be used as collateral with NBE, including total securities, investments in other entities, cash and due from banks (consisting of cash, interest and non-interest bearing interbank deposits, and interest and non-interest bearing balances with the central bank)(Gropp & Heider, 2009). But it doesn't make any difference to the finding. Hence, for comparing it with the documented evidences in nonfinancial firms, the reported result is based on fixed asset to total asset ratio.

greater chance of financial distress (Booth *et al.*, 2001). Besides, the expected high cost of distress in turn aggravates the agency problem of underinvestment (Myers, 2000; Baral, 2004). Similarly, in pecking order theory, investors would demand high risk premium for the perceived cost of distress in external financing (Shan & Khan, 2007). Thus, firms tend to prefer internal financing (Shan & Khan, 2007). Then, in both the tradeoff and pecking order theoretical models, earning volatility is predicted to be negatively related with leverage or positively related with equity capital ratio. ***Risk*** (***$Risk_{it-1}$***) is defined as the lagged standard deviation of return on assets of banks over the last 3 consecutive years (Berger *et al.*, 2008; Awdeh & Hamadi, 2011).

- **Regulatory Pressure**

After the deregulation of banking industry in Ethiopia, the adequacy of capital holdings of banks has been supervised by the National Bank of Ethiopia. Then, in order to investigate the effect of regulatory pressure on the capital structure decision of banks, two pertinent regulatory factors have been considered: namely, a minimum paid up capital regulation and a regulatory pressure for capital adequacy, as explained respectively below.

Minimum Paid Up Capital Regulation – To enhance solvency and stability, the existing banks operational prior to year 1999 have been required to increase their capital and attain the minimum capital of Br 75 million by the end of 2002 (Directive No SBB/24/99 of NBE). Besides, banks that were established after the year 1999 have been required to maintain the minimum paid up capital amount of Br 75 million to get a license (Directive No SBB/24/99 of NBE). To capture the effect of this regulation, the study used the minimum capital regulation dummy variable. By definition,

the minimum capital regulation dummy variable (McR$_{it}$) is the dummy variable that takes a value of 1 for observations between the years 2000 to 2002 (for the existing banks operational prior to the year 1999) and for observations after the year 1999 (for banks that were established after the year 1999) and a value of zero, otherwise.

Regulatory Pressure for Capital Adequacy – In offsite surveillance of the National Bank of Ethiopia, the capital adequacy of banks would be examined based on the peer group comparison (Addison & Geda, 2003). The peer-based regulatory pressure on capital adequacy would be captured by comparing the capital adequacy ratio of bank *i* in period t and the average capital adequacy ratio of all banks in period *t* (Marcus, 1983). The regulatory pressure may occur in low capitalized banks, i.e., in banks capitalized below the average capital adequacy ratio, but not in overcapitalized banks. Thus, the study employed the regulatory pressure for the capital adequacy dummy variable. ***The regulatory pressure for the capital adequacy dummy variable*** **(*RgP$_{it}$*)** is the dummy variable that equals 1, if the capital adequacy ratio of bank *i* in period *t* is less than the average capital adequacy of all banks in period *t*, and that equals zero, if the capital adequacy ratio of bank *i* in period t is greater than or equal to an average capital adequacy of all banks in period *t* (Marcus, 1983).

5.2.1.2. 3. Determinants of the Speed of Adjustment towards the Target

The study also investigated the possible asymmetric target capital structure adjustment or the heterogeneity of firms in their speed of adjustment towards the target capital structure. This helps to test the validities of the tradeoff theoretical model in a dynamic perspective. To this end, as the

determinants of the speed of adjustment, the study examined the deviations from the target capital structure, bank size, growth opportunities (Heishemti, 2001; Drobetz & Wanzedrid, 2006), liquidity (Memmal & Raupach, 2007), regulatory pressure on capital adequacy (Berger *et al.*, 2008) and ownership (Memmal & Raupach, 2007; Lepetit *et al.*, 2012).

5.2.1.2.3.1. Deviation from Target Capital Structure

The deviation of firms from their target capital structure may affect their speed of adjustment towards the target. If costs of rebalancing mainly constitute fixed costs, firms will adjust faster when they highly deviate or go far-off the target (Heshimite, 2001; Drobetz & Wanzedrid, 2006; Dang *et al.*, 2012). On the contrary, costs of rebalancing may increase with the increase in the deviation from the target, particularly in the presence of exorbitant fixed costs adjustment (Heshimite, 2001; Drobetz & Wanzedrid, 2006; Dang *et al.*, 2012). In this respect, firms tend to adjust slowly (Heshimite, 2001; Drobetz & Wanzedrid, 2006; Dang *et al.*, 2012).

However, the target capital structure adjustment dynamics may not be symmetrical for overleveraged and underleveraged firms (Byoun, 2008; Elsas & Florysiak, 2011; Faulkender *et al.*, 2012). In the dynamics, the actual leverage may be above the desired leverage (i.e., overleveraged) or the actual leverage may be below the desired leverage (i.e., underleveraged). In rebalancing the target, overleveraged banks may decrease debt or increase equity capital ratio, while underleveraged banks may increase debt financing or decrease equity capital ratio (Flannery & Hankins, 2007). Therefore, if there are different adjustment costs related to the paying off debt or equity issuance vis-à-vis the reduction of equity or debt issuance, the speed of adjustment may be

asymmetric for overleveraged and underleveraged banks (Byoun, 2008). Besides, the benefits of adjustment towards the target may also be asymmetrical for overleveraged and underleveraged firms (Faulkender *et al.*, 2012).

In line with the above theoretical explanation, the present the study examined the effect of deviation from target on the rate of adjustment from two perspectives. Firstly, the relative deviation of firms from the target—defined as the dummy variables—allowing the possible asymmetric capital structure adjustment for overleveraged and underleveraged banks (Byoun, 2008). Specifically, the overleveraged dummy variable equals 1, if the actual leverage is above the target leverage, and equals zero, otherwise (Byoun, 2008). The underleveraged dummy variable equals 1, if the actual leverage is below the target leverage, and equals zero, otherwise (Byoun, 2008). Then, the absolute deviation from the target leverage is defined as the absolute value of the difference between the target and the actual leverage of banks to examine its effect on the speed of adjustment (Drobetz & Wanzedrid, 2006).

5.2.1.2.3.2. Bank Size

If the costs of rebalancing entail high fixed costs, larger firms will incur low costs of adjustment from economies of scale as compared to smaller firms (Heshimitie, 2001). On top of this, in the too-big, too-fail hypothesis and possibilities of diversification, larger banks can also easily access external funding with less costs of information asymmetry (Aysuo *et al.*, 2004; Drobetz &

Wanzedrid, 2006). Hence, a positive relationship would be expected to exist between bank size—defined as the logarithm of bank assets—and the speed of adjustment.

5.2.1.2.3.3. Growth Opportunities

High-growth firms are expected to be relatively young firms, and hence they tend to hold low debt financing or high equity financing due to the agency cost of debt (Myers, 1977; Dang *et al.*, 2012). Further, higher growth opportunities of firms imply a frequent need of external equity financing (Dang *et al.*, 2012). By implication high-growth banks can adjust their capital structure more readily by choosing among alternative sources of funds (Drobetz & Wanzedrid, 2006; Dang *et al.*, 2012). On the other hand, low-growth prospects of banks imply less reliance on external financing, and hence such banks would experience a low rate of internal adjustment (Dang *et al.*, 2012). In other words, high-growth banks are expected to adjust more rapidly than low-growth banks (Dang *et al.*, 2012). On the contrary, as the low-growth prospects of banks imply less reliance on external equity financing, they face low costs of asymmetric information, and thus incur low adjustment costs than high-growth prospect of banks (Dang *et al.*, 2012). As a result, the effect of growth opportunities, defined as the percentage of change in the total assets of banks, on the speed of adjustment may be positive or negative.

5.2.1.2.3.4. Liquidity of Banks

High liquidity of banks implies high holding of cash and relatively less risky assets that may affect the capital structure adjustment dynamics (Memmal & Raupach, 2007). Banks that hold less risky,

highly liquid assets will be expected to adjust their capital structure faster than banks with relatively high risky, illiquid loans (Memmal & Raupach, 2007). On the other hand, banks with high liquidity will be able to meet short-term obligations when they have dues (Panno, 2003). Nevertheless, these cash holdings and other liquid assets may be subjected to high expropriations (Jenson, 1986). Due to this, highly liquid banks may adjust slowly. So, the effect of liquidity, defined as the ratio of liquid assets to total assets of banks, on the speed of capital structure adjustment may be positive or negative.

5.2.1.2.4. Regulatory Pressure for Capital Adequacy

Following Berger *et al.* (2008), the effect of the regulatory pressure for a capital adequacy on the speed of the capital structure adjustment of banks will be examined. If the regulatory pressure for capital adequacy influences the adjustment process, banks that hold a low capital ratio relative to the average capital ratio of banks are expected to adjust faster (Berger *et al.*, 2008). The regulatory pressure for capital adequacy will be a dummy variable that takes a value of 1, if the actual capital ratio is less than the average capital ratio, and a value of zero, otherwise.

5.2.1.2.5. Ownership of Banks

In examining the possible heterogeneity in the speed of adjustment, the ownership of banks has also been considered as the determinant of the speed of adjustment (Memmal & Raupach, 2007). From the very objectives of shareholders' wealth maximization, private banks are expected to hold leverage or capital ratio within a narrow interval and thereby to adjust faster than public banks (Memmal & Raupach, 2007). Compared to private banks, public banks may have objectives other

than value maximization (Memmal & Raupach, 2007). Besides, from the perspective of the agency problems, managers in public-owned banks may face low pressure and control from the ultimate principals, or from the citizens represented by government, as compared to private banks which are continuously monitored by the investors (La Port*a et al.*, 2002; Memmal & Raupach, 2007). Hence, the managers of public-owned banks may have high discretion in their capital structure decisions (Majumdar & Chhipper, 1999) and thus adjust slower than private banks (Memmal & Raupach, 2007). The ownership of banks will be the dummy variable that takes a value of 1 for private banks and a value of zero, otherwise (La Porta *et al.*, 2002; Memmal & Raupach, 2007; Brewer *et al.*, 2008).

In short, the operationalization/measurements of the variables used for the panel study can be summarized as shown in Table 5.1 below.

Table 5.1. Measurement of Variables in Panel or Longitudinal Study

Variable		Definition
Dependent Variable	Leverage	One minus Equity capital/Total asset ratio in book values
Determinants of capital structure	Effective Tax Rate	Ratio of tax paid to net income before tax
	Profitability	EBIT/Total Assets
	Growth	Percentage of change in assets
	Collateral values of assets	Tangible assets/ Total assets
	Size	Ln (Total assets)
	Earning volatility	Standard deviations of return on assets over the past 3 years
	Minimum capital regulation	Dummy variable that equals 1, for observation between 2000 to 2002 (in the existing banks prior to 1999), for post -2000 observations (in post -1999 bank entrants) and zero, otherwise.
	Regulatory pressure for risk-weighted capital adequacy	Dummy variable that equals 1, if average capital ratio of all banks in period t(AC_t) exceeds capital ratio of bank i in period t (C_{it}), and zero, if $AC_t <= C_{it}$
Determinants of adjustment rate	Deviation from target *Relative Deviation* *- Overleveraged* *- Underleveraged* *Absolute Deviation*	 *-Dummy variable equals 1, if actual lev. is above target lev. and zero, otherwise* *-Dummy variable equals 1, if actual lev is below target lev.and zero, otherwise* The absolute value of the difference b/n actual leverage and target leverage
	Size	Ln (Total assets)
	Growth	Percentage of change in assets
	Liquidity	Ratio of liquid asset to total asset
	Regulatory pressure for risk-weighted capital adequacy	Dummy variable equals 1, if average capital ratio of all banks in period t (AC_t) exceeds capital ratio of bank i in period t (C_{it}),and zero, if $AC_t <= C_{it}$
	Ownership	Dummy variable equals 1, if a bank is privately owned and zero, otherwise

5.2.1.3. Methods of Data Collection

In the panel or longitudinal research design, the study used secondary data. These secondary data have been collected through document review of audited annual financial reports consisting of balance sheet, income statements, cash flow statements and the related supporting materials, of selected commercial banks. To check data consistency, annual reports of commercial banks to the National Bank of Ethiopia that are available for public use have been also collected. This type of data collection provides unbalanced panel data set of observations across banks over the period ranging from 2000 to 2012.

5.2.1.4. Methods of Data Analysis/Econometric Panel Data Model Specification

The study employed the quantitative methods of data analysis. Specifically, the researcher used both the static and dynamic panel data regression models. These panel data models are expected to address the different aspects of the problem under study and to be complementary to each other (Wooldridge, 2002; Konan, 2008). Obviously, to investigate the determinants of capital structure, the study estimates the econometric static panel data regression model. Besides, the dynamic panel data models that help to investigate the capital structure adjustment dynamics of banks have also been estimated.

5.2.1.4.1. Static Panel Model

In this study, the static panel model has been used to investigate the determinants of the capital structure of banks in a static framework (Drobetz & Wanzenried, 2006). In this model, the capital

structure of banks is assumed to be dependent linearly on observable determinants and unobservable effects (Frank & Goyal, 2004; Lemmon *et al.*, 2008). If any of these factors is found to be significant in estimations, it confirms the relevance of the capital structure decisions in the banks of Ethiopia. On the other hand, it rejects the randomness or the leverage irrelevance proposition propounded by Modigliani & Miller (1958)(Gaud *et al.*, 2003). Following previous empirical studies (Gropp & Heider, 2009; Çağlayan & Sak, 2010), the static panel model equation to be estimated has been specified as in equation (1):

$$\mathcal{L}_{it} = \beta_0 + \Sigma\, \beta_j \mathcal{X}_{jit-1} + \upsilon_i + \gamma_t + \nu_{it} \qquad (1)$$

where, $\mathcal{L}_{it}$ is leverage of bank i in period t. β_0 is the constant term. β_j is the coefficient of the jth set of explanatory variables. $\mathcal{X}_{jit-1}$ is the jth set of explanatory variables of bank *i* at time *t-1*. These explanatory variables ($\mathcal{X}_{jit-1}$) include effective tax rate, profitability, growth, collateral values of assets, size, earnings volatility, minimum paid up capital regulation and regulatory pressure for capital adequacy dummy variables, as defined in Table 5.1. Besides, all these explanatory variables ($\mathcal{X}_{jit-1}$), except the regulatory pressure variables, lagged one year to reduce simultaneity bias (Wooldridge, 2002; Gropp & Heider, 2009). υ_i is the unobservable time-invariant bank-specific effect. γ_t is the unobserved firm-invariant time-specific effect. ν_{it} is the disturbance term.

In estimating model equation (1), the three commonly used estimators in the literature include pooled OLS, fixed effect and random effect model estimators (Wooldridge, 2002). The pooled OLS estimator implicitly assumes the homogeneity of firms (Green, 2003). Hence, Pooled OLS

estimates will be inefficient in the presence of unobservable firm-specific effect (Lemmon *et al.*, 2008). The static panel model equation (1) would control the possible unobservable bank-specific effect (υ_i). Besides, it controls the unobservable time-specific effect (γ_t) from changes in the macroeconomic factors and regulatory forces other than capital regulation (Kleff & Weber, 2004; Lemmon *et al.*, 2008; Gropp & Heider, 2009). However, in the presence of unobservable bank-specific effect, either fixed effect or random effect static panel model estimator may be appropriate for estimating equation (1) (Wooldridge, 2002).

Then, in estimating model equation (1), firstly, testing would be conducted for the presence of an unobserved bank-specific effect, and then, in its presence, the fixed effect and the random effect panel data estimators would be compared. In testing the presence of unobserved fixed effect, the Lagrange Multiplier test (LM test) would be used. In LM test, the null hypothesis is the unobservable firm-specific effect is not relevant to explain the dependent variable. If the null hypothesis is rejected, the fixed effect or random effect panel model estimators would be more appropriate than pooled OLS and vice versa (Park, 2009). In the presence of unobserved bank-specific effect, the Hausman test would be conducted in order to compare and choose either the fixed effect or the random effect estimator (Green, 2003; Wooldrige, 2002). In Hausman test, the null hypothesis is that no correlation exists between unobserved effect and explanatory variables (Green, 2003; Wooldrige, 2002). If the null hypothesis is rejected, the fixed effect estimator would be chosen rather than random effect and vice versa[27] (Wooldridge, 2002).

[27] In fixed effect model, the unobserved effect will be captured by intercepts that will vary across individual banks and/or time and estimation would be made using least square dummy variable or within FE estimator (Green, 2003; Park, 2009). In contrast, in the random effect model, the unobserved effect will be the part of the error term, assuming

Furthermore, the panel data set may be susceptible to problems of heteroskedasticty and serial correlations. Thus, in testing for the possible presence of heteroskedasticty, the modified Wald test for group-wise or panel heteroskedasticiy with the null hypothesis of homoskedasticity would be used. Moreover, in testing serial correlation, the Wooldridge test for autocorrelation in panel data for the null hypothesis of no-first-order autocorrelation would be conducted (Cameron & Trivedi, 2009). Thus, in estimating model equation(1), whether there is the fixed effect or the random effect model estimator, standard errors will be clustered at the bank level to have unbiased standard errors due to the presence of heteroskedasticity and serial correlations of errors (Peterson, 2007; Gropp & Heider, 2009). Further, to test the presence of unobserved time-specific effect, the joint test will also be carried out with the null hypothesis that all year dummy coefficients equal to zero.

5.2.1.4.2. Dynamic Panel Model-Capital Structure Adjustment Dynamics

The study employed the dynamic panel model to investigate the capital structure adjustment dynamics of banks. Due to the possible presence of adjustment costs, banking firms may not rebalance their capital structure instantaneously to attain the target capital structure. Rather, they may tend to adjust partially to revert towards the target through time (Myers, 1984). Likewise, banks having different characteristics may face adjustment costs differently. As a result, there may be an asymmetric target adjustment or a heterogeneous speed of adjustment. Thus, this subsection specifies the dynamic panel models to be estimated in examining the adjustment dynamics. In

the same slopes across individual banks and /or time, and the generalized least square (GLS) random effect estimator will have efficient estimates.

doing so, the symmetrical target capital structure adjustment model has been firstly specified. Then, it is followed by the asymmetrical target capital structure adjustment and heterogeneous target adjustments model specifications.

5.2.1.4.2.1. Symmetrical -Partial Target Capital Structure Adjustment Model

In the absence of adjustment costs, capital structure adjustment is assumed to be instantaneous. This implies that, at a given point in time, the observed capital structure equals the optimal or target capital structure. In the dynamic perspective, this instantaneous adjustment would occur only if the actual change in capital ratio or leverage in a given period equals the change in capital ratio or leverage needed to be at the desired or target level (Heishemti, 2001).

However, due to the possible presence of adjustment costs, there may not be a complete adjustment; rather, firms may tend to adjust partially towards the long-run target capital structure through time (Myers, 1984; Heishemti, 2001). This target capital structure adjustment dynamics is predicted in the tradeoff (dynamic) theory of capital structure (Myers, 1984; Fischer *et al.*, 1989).

Therefore, to examine the partial target capital structure adjustment dynamics of banks, the partial capital structure adjustment model (Marcus ,1983; Flannery & Rangan ,2006; Brewer *et al.*, 2008) can be stated as in equation(2):

$$\mathcal{L}_{it} - \mathcal{L}_{it-1} = \lambda (\mathcal{L}^{*}_{it} - \mathcal{L}_{it-1}) + \varepsilon_{it} \qquad (2)$$

Rearranging equation (2), the partial adjustment model to be estimated can be specified as in equation (3):

$$\mathcal{L}_{it} = (1-\lambda)\mathcal{L}_{it-1} + \lambda \mathcal{L}^{*}_{it} + \varepsilon_{it} \qquad (3)$$

where, $\mathcal{L}_{it}$ is the actual leverage of bank *i* in period *t* and $\mathcal{L}_{it-1}$ is the lagged actual leverage in period t-1. $\mathcal{L}_{it}^{*}$ is target leverage of bank i in period t. $\boldsymbol{\lambda}$ is the partial adjustment coefficient that shows the speed of adjustment towards the target. In equation (3), the speed of adjustment ($\boldsymbol{\lambda}$) will be one minus coefficient of lagged leverage (Flannery & Hankins, 2007). $\boldsymbol{\varepsilon}_{it}$ is the error term.

The partial adjustment coefficient $\boldsymbol{\lambda}$, is inversely related with adjustment costs. Further, it is expected that $0 \leq \boldsymbol{\lambda} \leq 1$. If $\boldsymbol{\lambda} = 0$, there is no observed adjustment towards target capital structure due to prohibitive adjustment costs. If $\boldsymbol{\lambda} = 1$, it implies the absence of adjustment costs and adjustment towards the desired capital structure is instantaneous. If $\boldsymbol{\lambda}$ is close to 1, there is a high speed of adjustment of banks towards the target due to low adjustment costs. On the contrary, $\boldsymbol{\lambda}$ close to zero implies the presence of high costs of adjustment and hence a slow speed of adjustment towards the target. It is also possible that $\boldsymbol{\lambda} > 1$, which may imply that firms adjust more than needed and hence, it is not at its target leverage (Drobetz & Wanzedrid, 2006).

In estimating equation (3), we need to know the target leverage ($\mathcal{L}_{it}^{*}$). However, $\mathcal{L}_{it}^{*}$ is not directly observable. Following previous studies (Marcus ,1983; Sharp ,1995; De Miguel & Pindado ,2001; Ozkan, 2001; Flannery & Rangan, 2006; Brewer *et al.*, 2008), the target capital structure ($\mathcal{L}_{it}^{*}$) of banks will be a linear function of a set of exogenous observable factors and unobservable effects in equation (1)(Lemmon *et al.*,2008)[28]. However, given the factors in equation (1), we may use a two-

[28] $\mathcal{L}_{it}^{*}$ can also be represented by the historical mean or the moving average of observed leverage (Jalilivand & Harris, 1984; Shyam & Myers, 1999). However, this approach has been criticized as there is no reason to assume that target leverage should remain constant over a period of time (Shyam & Myers, 1999; Heishemti, 2001; Dang *et al.*, 2008).

stages or a one-step procedure to estimate equation (3). In the two-stages procedure, firstly, we estimate equation (1) to compute the fitted values for the target, and then we use the fitted values obtained in the first regression as the proxy for the target in the estimation of equation (4) (Shyam & Myers, 1999; Fama & French, 2002). On the other hand, in the one-step procedure, we substitute the variables in equation (1) directly into equation (4) to investigate the partial capital structure adjustment process in a single equation (Ozkan , 2001; De Miguel & Pindado ,2001; Flannery & Rangan, 2006). Therefore, the study investigated the partial capital structure adjustment process of banks, by substituting the factors in equation (1) for L_{it}^{*} into equation (3) (Marcus, 1983; Sharp, 1995; De Miguel & Pindado ,2001; Ozkan,2001; Flannery & Rangan, 2006; Brewer *et al.*, 2008) and, estimating a single partial adjustment model equation (4) :

$$L_{it} = a_0 + a_k L_{it-1} + \Sigma a_j X_{j,it-1} + \eta_i + \theta_t + \varepsilon_{it} \qquad (4)$$

Where, $a_0 = \lambda\beta_0$, $a_k = 1-\lambda$, $a_j = \lambda\beta_j$, $\eta_i = \lambda u_i$ and, $\theta_t = \lambda\gamma_t$

In estimating the dynamic panel model specified in equation (4), the presences of a lagged explained variable, as one of the explanatory variables, and the unobserved bank-specific fixed effect are worthy of consideration. In the presence of the lagged dependent variable that may be endogenous to the unobserved effect contained in the error term, estimating equation(4) based on the ordinary least square method (OLS) will be inconsistent and biased up ward (Roodman, 2007; Wooldrige, 2002). One way to deal with the problem of an unobserved bank-specific effect is to transform the lagged dependent variable and to remove the fixed effect based on the fixed effect estimators (Wooldridge, 2002; Roodman, 2007). However, because of the correlations between

the transformed lagged dependent variable and the transformed error tern, the fixed effect estimator coefficients may also be biased (Wooldridge, 2002).

Then, to deal with the problems of the OLS and fixed effect estimators, the study used the Arellano and Bond (1991) Difference GMM estimator to estimate the dynamic panel model equation(4). Arellano and Bond (1991) developed efficient estimate in Generalized Methods of Momentum (GMM) based on the first difference and instrument variables. In this estimator, we will use the first difference to eliminate the unobserved effect, and then the first differenced endogenous variables will be instrumented with its past levels (Gaud *et al.*, 2003). However, the Difference GMM estimator will be consistent, if there is no second-order serial correlation between the error term and the first differenced equation (Green, 2003; Flannery & Hankins, 2007; Cameron & Trivedi, 2009). Thus, the present researcher chose to use Arellano and Bond (AR_2) test for the second-order serial correlation. Besides, the use of too many instruments relative to the number of cross-sectional observations is known to over-fit endogenous variable, and hence it will create biased estimate (Roodman, 2007). Due to this, the Sargan test would be used to test the over-identifying restrictions (Roodman, 2007).

However, the Difference GMM estimator may provide biased estimates, especially when there is a persistent data series in a bank's leverage (Arellano & Bover, 1995; Roodman, 2007). More specifically, lagged levels will produce weak instruments for the first differenced endogenous variables (Arellano & Bover, 1995; Roodman, 2007). For this reason, the study also employed the System GMM estimator proposed by Blundell and Bond (1998). System GMM provides efficient

estimate in the presence of a persistent data series (Huang & Ritter, 2009). Particularly, in the system GMM estimator, we take the first difference of equation (4). Then, we will estimate simultaneously the systems of level equation (4), by using lagged differences as instruments and the difference equation, by using the lagged levels as instruments (Roodman, 2007; Huang & Ritter, 2009). But the system GMM is also valid only in the absence of second-order autocorrelation in the differenced error term. Hence, the study would use the Arellano and Bond (AR2) test for second-order serial correlation. To test the validity of the instrument, the Sargan test for the over-identifying restriction is also employed in this estimation.

5.2.1.4.2.2. Asymmetrical Target Capital Structure Adjustment Model

The specified partial target capital structure adjustment model equations (2) to (4)(Marcus ,1983; Sharp, 1995; De Miguel & Pindado, 2001; Ozkan, 2001; Flannery & Rangan, 2006; Brewer *et al.*, 2008) are based on the implicit assumptions of a symmetrical target capital structure adjustment (Farhat,2003). All banks are assumed to adjust toward the target at a homogeneous speed of adjustment (Dang *et al.*, 2012). However, the target capital structure adjustment may be asymmetrical for leverage-decreasing (overleveraged) and leverage-increasing (underleveraged) banks in rebalancing (Flannery & Hankins, 2007; Byoun, 2008; Faulkender *et al.*, 2012).

Thus, the present study investigates the possible asymmetric speed of the target capital structure adjustment of banks that differ in their relative deviations from the target (overleveraged and underleveraged). To this end, following Byoun (2008), the study explored the target capital structure adjustment, allowing for the possible asymmetric speed of adjustment for both

overleveraged and underleveraged banks by using the dummy variable approach, as in estimating equation (5):

$$\mathcal{L}_{it} - \mathcal{L}_{it-1} = \Delta \mathcal{L}_{it} = \varphi_0 + \varphi_1 (\mathcal{TDE}_{it}) \mathcal{D}_{it}^{above} + \varphi_2 (\mathcal{TDE}_{it}) \mathcal{D}_{it}^{below} + \varepsilon_{it} \qquad (5)$$

Where, $\Delta\mathcal{L}_{it}$ is changes in the actual leverage of banks ($\mathcal{L}_{it} - \mathcal{L}_{it-1}$). $\mathcal{TDE}_{it}$ is the deviation from the target leverage ($\mathcal{L}^{*}_{it} - \mathcal{L}_{it-1}$). $\mathcal{D}_{it}^{above}$ is the dummy variable that equals1 if overleveraged (if the actual leverage is above the target leverage ($\mathcal{L}^{*}_{it} - \mathcal{L}_{it-1} < 0$)), and equals zero, otherwise. $\mathcal{D}_{it}^{below}$ is dummy variable that equals one if underleveraged (if actual leverage is below target ($\mathcal{L}^{*}_{it} - \mathcal{L}_{it-1} > 0$)) and, zero otherwise. ε_{it} is error term.

In estimating equation (5), the study would use the two-stage procedures (Fama & French, 2002). In the first stage, being based the factors in equation (1), estimation is to be made based on the static panel model estimators to obtain the fitted value of the target leverage ('$\mathcal{L}^{*}_{it}$). In the second stage, the fitted value would be used to investigate the variations in the speed of the capital structure adjustment process of the overleveraged and underleveraged banks. As the fitted value is computed in the first stage, deviations from the target ($\mathcal{TDE}_{it}$) would be computed as the difference between the fitted value ('$\mathcal{L}^{*}_{it}$) and the actual lagged leverage ratio ($\mathcal{L}_{it-1}$) for each bank year. Thus, once the deviations from the target are known, comparisons would be made among the pooled OLS, the fixed effect and the random effect models, by using the Hausman specification test for the fixed or the random effect, and the Lagrange multiplier (LM) test for the presence of the unobservable effect to choose an appropriate technique for estimating equation

(5). In the estimations, we can investigate the possible asymmetric adjustment by using φ_1 and φ_2 (Byoun, 2008).

5.2.1.4.2.3. Model of Capital Structure Adjustment with a Heterogeneous Speed of Adjustment

The partial target capital structure adjustment model equations (2) to (4) also implicitly assume that the speed of the adjustment coefficient is time-and bank-invariant that it remains the same across banks and over time (Farhat, 2003). Besides, the asymmetrical capital structure adjustment model equation (5) only focuses on the relative deviation from the target to examine the possible variations in the speed of adjustment. However, due to the firm-specific adjustment costs, the dynamic capital structure theory predicts the existence of heterogeneity in the adjustment speed of firms (Elsas & Florysiak 2011). As firms may differ in their characteristics, they may face adjustment costs differently (Dang *et al.*, 2012). As a result, there may be a cross-sectional heterogeneity in the speed of adjustment towards the desired capital structure (Berger *et al.*, 2008; Elsas & Florysiak 2011; Dang *et al.*, 2012; Faulkender *et al.*, 2012; Lepetit *et al.*, 2012).

In light of this, the present study also investigates the heterogeneity in the speed of adjustment, allowing the rate of adjustment (λ) to be varied across banks and over time as in equation (6):

$$\lambda_{it}=\Phi_j Z_{it} \qquad (6)$$

Where, λ_{it} is the rate of adjustment to be varied (to be heterogeneous) across banks with different characteristics and over time. Φ_j is the vector of the coefficients of the adjustment speed functions. Z_{it} is the vector of the determinants of the speed of adjustment variables that vary both across banks and over time. As stated in Table 5.1, Z_{it} includes the (absolute) deviations from the target,

size, growth opportunities (Heishemti, 2001; Drobetz & Wanzedrid, 2006), liquidity (Memmal & Raupach, 2007), ownership (Memmal & Raupach, 2007; Lepetit *et al.*, 2012) and regulatory pressure for capital adequacy (Berger *et al.*, 2008).

Substituting equation (6) and equation (1) into equation (3) will provide equation (7):

$$\mathcal{L}_{it} = (1 - \Phi_j \mathcal{Z}_{it}) \mathcal{L}_{it-1} + \Phi_j \mathcal{Z}_{it} (\beta_0 + \Sigma \beta_j \mathcal{X}_{jit-1} + \upsilon_i + \gamma_t) + \varepsilon_{it} \qquad (7)$$

Rearranging equation (7) will yield the following empirical model equation (8) that would be estimated to investigate the possible heterogeneity in the speed of the target capital structure adjustment:

$$\mathcal{L}_{it} = \mathcal{L}_{it-1} - \Phi_j \mathcal{Z}_{it} \mathcal{L}_{it-1} + \Phi_j \mathcal{Z}_{it} (\beta_0 + \Sigma \beta_j \mathcal{X}_{j,it-1} + \upsilon_i + \gamma_t) + \varepsilon_{it} \qquad (8)$$

In estimating equation (8), past studies (Banjeree *et al.*, 2000; Heishemti, 2001; Loof, 2003; De Haas & Peeters, 2006) used the nonlinear least square estimators so as to consider the resulting nonlinear equation (8) in both parameters and variables. However, the nonlinear estimator may lead to biased estimates for equation (8) due to the correlation between the error term and the lagged leverage (Drobetz & Wanzedrid, 2006; Zheka, 2008; Khodjamirian, 2008)[29].

In line with the above explanation, the present study used the GMM dynamic panel data estimators (Drobetz & Wanzedrid, 2006; Zheka, 2008; Khodjamirian, 2008; Dang *et al.*, 2012) to

[29] Among other methodological treatments, some recent past studies (Flannery & Hankins, 2007; Byoun, 2008) use the sample splitting or dummy variable approach. However, the sample splitting or dummy variable approach may result in smple selection problems (Dang *et al.*, 2012). Besides, the DPF estimator will be efficient in the presence of censored outcomes at the points of 0 and 1(Elsas & Florysiak, 2011). However, in the context of the present study, there is no need to censor the outcome because the study is based on book leverage.

estimate equation (8). In this regard, both the Arellano and Bond (1991) Difference GMM estimator and the System GMM estimator (Blundell & Bond, 1998) were used (Drobetz & Wanzedrid, 2006; Zheka, 2008). As stated earlier, in Difference GMM estimator, the first difference will eliminate the unobserved fixed effect and the first differenced endogenous variables will be instrumented with its past level. For the Difference GMM estimator to be consistent and unbiased, testing was carried out for the presence of second-order autocorrelation (AR_2). In addition, the Sargan test would also be carried out to test the over-identifying restrictions (Roodman, 2007). However, in the presence of a persistent panel data series, Arellano & Bover (1995) pointed out that the Difference GMM estimator is inefficient, and thereby the proposed the System GMM estimator as efficient (Blundell & Bond, 1998). Based on thus, the present study also re-estimates equation (8) using the System GMM estimator (Khodjamirian, 2008). Once again, both the test for the presence of the second-order autocorrelation and the Sargan test for the over-identifying restrictions have been conducted in the System GMM.

5.2.2. Cross-Sectional Survey

To complement and substantiate the possible findings based on the panel data model estimations, the study also employed a cross-sectional survey design. Hence, this section describes the sampling design, measurement instruments, methods of data collection and methods of data analysis used in the cross-sectional survey design respectively.

5.2.2.1. Target Population, Unit of Analysis and Sample

The unit of analysis of the cross-sectional survey study has been comprised of chief financial officers (CFOs)[30] of banks. As stated earlier, the population of banks in Ethiopia is constituted of three public banks and fifteen privately owned banks. Then, in our case, the target population of the cross-sectional survey research is defined as being comprised of all the CFOs of these eighteen banks which are registered as incorporated banks under the proclamations of NBE. To obtain the sample of the study, two exclusion criteria have been used. Firstly, from the public-owned banks, Development Bank of Ethiopia is the specialized government-owned bank that mainly focuses on financing long-term public projects and that uses different funding sources. Hence, as its financing sources differ from that of other commercial banks, the CFO of Development Bank of Ethiopia has been excluded from the survey. Secondly, as the capital structure decision is expected to span at least a year (Marques & Santos, 2000), the CFOs of banks having less than one year of tenure have also been excluded. In this regard, the CFOs of private banks, including the CFOs of Enat Bank and Debub Global Bank, have been excluded from the survey study.

As a result, the sample constitutes all selected 15 CFOs of fifteen banks with a minimum of one year of tenure. In this respect, one questionnaire was distributed to each selected CFOs of the banks which are registered as incorporated banks under the proclamations of NBE.

[30] It also constitutes Finance Directors/Finance managers, Fund managers, Treasurers and Controllers, depending on the organizational structure of banks.

5.2.2.2. Measurement Instrument for Cross-Sectional Survey

The survey questionnaire has been first drafted based on the review of factors predicted in the theoretical models and the available survey studies on the capital structure decision of firms (Pinegar & Wilbricht, 1989; Allen, 1991; Graham & Harvey, 2001; Bancel & Mitto, 2004; Beattie *et al.*, 2006; Archbold & Lazirdis, 2010; Nor *et al.*, 2012); and appropriate modifications to the questionnaire were made in line with the context of banking firms in Ethiopia (Wong *et al.*, 2004). Then, the pilot test was conducted based on the questionnaire drafted and then distributed using the convenience sample of academics and research colleagues at Bahir Dar University. Next, the formats, wordings and contents of the questionnaire have been revised and/or modified accordingly (Beattie *et al.*, 2006; Nor *et al.*, 2012).

Besides, to facilitate the completion of the questionnaire and to obtain the relevant information, the survey questionnaire of the study is structured into three main sections. The first section is an introduction, constituting a cover letter (1) that explains the purpose of the research and the importance of the responses to be gathered and (2) that assures the anonymity of the respondents and the confidentiality of their responses (De Jong & van Dijk, 2001; Beattie *et al.*, 2006). The second section consists of substantive questions related to the conceptual framework of the study and/or factors determining the capital structure decision and capital structure adjustment dynamics of financial firms, as are predicted in the theoretical models. Specifically, this section of the questionnaire constitutes specific items/questions related to the respondents' perceptions about the determinants of the capital structure and capital structure adjustment dynamics. Besides, all questions about the determinants of the capital structure are formulated using a Likert scale that

uses five graded responses to each of the statements (questions), including: Strongly Agree(Strongly Important) (5), Agree(Important) (4), Undecided (3), Disagree(Little Important) (2) and Strongly Disagree(Not Important) (1) (De Jong *et al.*, 2003; Beattie *et al.*, 2006). Nevertheless, questions about the capital structure adjustment dynamics are also stated in the nominal scale–Yes or No question type and/or multiple choice question type (De Jong *et al.*, 2003; Beattie *et al.*, 2006). Finally, the third section of the questionnaire contains classifying questions concerned with the demographics of the respondents (CFOs) and firmographics (bank characteristics).

5.2.2.3. Methods of Data Collection

In the cross-sectional field survey design, primary data has been collected from the selected CFOs of banks under study. To be precise, the primary data can be collected from the respondents (CFOs of banks) using two data collection methods: a face-to-face interview and a self-administered questionnaire (Bhattacherjee, 2012). Using the face-to-face interview survey format provides an avenue to clarify questions to respondents and is expected to decrease the non-response bias (Marques & Santos, 2003; Bhattacherjee, 2012). However, the face-to-face interview survey format may not be welcomed by respondents who, for one reason or another, want to remain anonymous (Bhattacherjee, 2012). For this main reason, the present researcher decided to use only a self-administered questionnaire for collecting the primary data needed for the study. This method of data collection helps to deal with the possible problems of respondents seeking their anonymity and confidentiality of their responses (Bhattacherjee, 2012). Nevertheless, the self-administered questionnaire survey is also criticized for the possible or expected non-response bias. Thus, to reduce the non-response bias, all the necessary standard techniques have been employed;

particularly, great care was taken to ensure the clarity of each of the questions and instructions in the questionnaire (Beattie *et al.*, 2006). Besides, the necessary follow-up and reminders to the responses//respondents// have been made (Beattie *et al.*, 2006; Bhattacherjee, 2012).

5.2.2.4. Methods of Data Analysis for Cross-Sectional Survey

In analyzing the cross-sectional survey data, the study used statistical techniques appropriate to the measurement scale. Specifically, for ordered or ranked responses, the mean scores were computed by assigning scores ranging from 1 to 5 and corresponding to rankings from "not important" ("strongly disagree") to "very important" ("strongly agree") respectively, and by multiplying each score by the fraction of responses within each rank (Pinegar & Wilbricht, 1989). The study also analyzed the ranked survey responses conditional on firmographics (bank characteristics) and tested the significance of the possible differences in the mean scores of ranked responses based on the Mann-Whitney non-parametric test (Field, 2009; Nor *et al.*, 2012). The Mann-Whitney non-parametric test will be appropriate for ranked responses and is expected to be more robust than the parametric t-test (Field, 2009). This is especially true in the presence of outliers and the not normally distributed samples that would be inherent in small samples (Field, 2009; Chazi *et al.*, 2010). Besides, for the nominal scale items, the percentage of responses to the alternative categories has been computed (Muijs, 2004). Further, to test the possible differences in the responses to the nominal items conditional on bank characteristics, the study also applied the likelihood ratio test (Field, 2009). Despite the fact that the likelihood ratio test statistic has a chi-square distribution and degrees of freedom similar to a chi-square test, the likelihood ratio test is appropriate and preferred to the chi-square test in the presence of small samples (Field, 2009).

5.3. Research Ethics

The entire process and procedures of the study are designed in due consideration of the ethical principles that social science research should follow. Accordingly, standard procedures of a quantitative research approach have been applied to both primary and secondary data collection and processing (Balnaves & Caputi, 2001; Muijs, 2004; Williman, 2006; Saunders *et al.*, 2009; Vanderstoep & Johnston, 2009). In doing so, a triangulation of data has been conducted to ensure the quality and accuracy of the data, particularly for secondary data. Specifically, secondary data have been collected from both the annual reports of each commercial bank and the annual reports of banks to National Bank of Ethiopia that are available for public use. Besides, in designing the survey instrument and in gathering responses, standard ethical issues, including informed consent, privacy, anonymity and confidentiality of the research participants have been applied/respected (Muijs, 2004; Williman, 2006; Vanderstoep & Johnston, 2009).

5.4. Methodological Limitations

Despite the strengths of the methodologies of the study, there are also limitations. Firstly, due to market data unavailability in Ethiopia, the measure of the dependent variable of the study, leverage, has been limited to the use of book values. Hence, this may limit the interpretations of findings and create a difficulty in comparing the findings of the study with the documented evidences in other countries. Secondly, both in the theoretical and empirical literature on the subject, the interrelationships between the corporate governance of banks and the capital structure adjustment dynamics have been documented (Zwiebel, 2006). However, due to the difficulty in

accessing data for a wide range of corporate governance variables, the study failed to examine the relationship between corporate governance and the capital structure adjustment dynamics of banks. Thirdly, the limitation of the study may be related to the proxy variables used for the operationalization of constructs. Even if the proxies used in the study are empirically tested, they may still imperfectly represent all the dimensions of the unobservable constructs predicted in the theoretical model (Titman & Wessels, 1988). Besides, it is often difficult to find measures of a particular unobservable attribute or proxies that are unrelated to the other (Titman & Wessels, 1988). Fourthly, the study focused on the analysis of the capital structure decision of banks operating in a single country. Hence, the study does not consider the cross-country differences in macroeconomic and regulatory factors. This may limit the implications (robustness) of the findings for the determinants and capital structure adjustment dynamics of banks. Finally, due to the limited size of the target population and then due to limited sample size, the survey instrument is designed to investigate the determinants and the dynamics of the capital structure adjustment based on the relations examined. Hence, if the survey instrument has been designed in such a way that it directly gathered evidence on the determinants rather than the relations to be examined and other methods of data analysis, like structural equation modeling, were applied, the findings of the study might be different and provide additional insights (De Jong & van Dijk, 2001; De Jong *et al.*, 2003)[31].

[31] The relationship may be examined by regressing the responses to the determinants and financing decisions using the structured equation modeling (De Jong & van Dijk, 2001; De Jong *et al.*, 2003)[31].

CHAPTER SIX: RESULTS AND DISCUSSIONS

6.1. Introduction

This chapter presents the results the analysis of the empirical data on the determinants and the capital structure adjustment dynamics and it discusses the results in relation to the theoretical and prior empirical literature on the subject in question. In so doing, the chapter has been classified into two main sections (i.e., sections 6.2 & 6.3, which are further divided into subsections). Of these two main sections, the former describes the empirical results of the econometric panel model estimations and the results of the cross-sectional survey; and the second section primarily constitutes the discussion of the results documented in secondary data-based panel models and cross-sectional survey.

6.2. Results

This section of the chapter, as stated above, reveals the estimation results of the empirical investigation into the determinants of the capital structure and the target capital structure adjustment dynamics of banks in Ethiopia. Then, the first subsection unveils the documented results on the determinants and dynamics of the capital structure adjustment of banks based on estimations of the static and dynamic panel models specified in the preceding chapters. Most specifically, the results of the determinants of capital structure within a static framework and of the capital structure adjustment dynamics—including the symmetrical, asymmetrical and heterogeneous capital structure adjustment dynamics—have been described, respectively, under

the subsequent subsections. In addition, the findings documented in the panel model estimations have been complemented and/or corroborated by the cross-sectional survey results of the determinants of capital structure and the target capital structure setting behavior and adjustment dynamics of the Ethiopian banks under study.

6.2.1. Empirical Results of Econometric Panel Model Estimations

To investigate the determinants and the dynamics of the capital structure of banks in question, secondary data-based panel study was used in the present research. To this end, panel data were collected from the annual reports of selected commercial banks operational in Ethiopia over the period ranging from 2000 to 2012. Then, the summary statistics and correlation matrix, and the empirical results of both the static panel model and the dynamic panel model estimations have been presented, respectively, under the next three subsections.

6.2.1.1. Summary Statistics and Correlation Matrix

Based on the panel data collected from selected commercial banks of Ethiopia over a period of time ranging from 2000 to 2012, the descriptive statistics have been reported in Table 6.1 below. As pointed out in one of the preceding chapters, the scope of the present study was confined to the selected fourteen commercial banks in Ethiopia and the necessary data were collected within a period of time stated above[32].

[32] These selected banks represent around 66.7% of all banks operational in Ethiopia under the proclamation of NBE as of the end of the year 2012.

In other words, as indicated in the subsection 5.2.1.1, due to the lag nature of the analysis, the data were collected only from banks operational for at least three consecutive years during the given time frame of the study. These secondary panel data were obtained from bank's annual report and from the annual reports of each bank to the National Bank of Ethiopia (NBE)[33]. Then, based on the analysis of the collected data, the descriptive statistics, including mean, median, standard deviation, minimum and maximum values for the continuous variables-dependent variable and independent variables, have been depicted in Table 6.1 below.

[33] For most selected banks, these data are also readily available from their websites. Besides, the data were available in NBE during a period time from 2000 to 2012 were collected in order to crosscheck the consistency of data and ensure the accuracy of data.

Table 6.1. Descriptive Statistics

Variable[34]	Obs[35]	Mean	Median	Std. dev.	Min	Max
Leverage	124	0.870	0.886	0.066	0.455	0.963
Panel A	*Determinants of Capital Structure*					
Effective Tax Rate	124	0.288	0.293	0.148	0.000	0.911
Profitability	124	0.045	0.051	0.020	-0.017	0.100
Growth	120[a]	0.389	0.298	0.332	-0.019	2.486
Collaterals	124	0.019	0.015	0.012	0.006	0.079
Size	124	21.476	21.312	1.426	18.146	25.462
Earning Volatility	109[b]	0.011	0.008	0.010	0.001	0.060
Panel B	*Determinants of Rate of Adjustment*					
Deviation	109	0.030	0.023	0.031	0.002	0.179
Growth	120[a]	0.389	0.298	0.332	-0.019	2.486
Size	124	21.476	21.312	1.426	18.146	25.462
Liquidity	124	0.407	0.389	0.134	0.142	1.115

Notes: Leverage *is one minus the ratio of equity capital to total assets of banks, in book values.* ***Effective tax rate*** *is the ratio of tax paid to net income before tax.* ***Profitability*** *is earning before interest and taxes over total assets.* ***Growth:*** *the percentage of change in total assets of banks.* ***Collateral*** *is the ration of tangible assets to total asset.* ***Size*** *is the natural logarithm of total assets.* ***Earning Volatility*** *is the standard deviation of return on asset over the past consecutive three years.* ***Deviation*** *is the absolute value of the difference between observed leverage and target leverage where target leverage is obtained as the fitted value of FE regression of leverage on the selected determinants.* ***Liquidity*** *is the ratio of liquid asset to total asset.*

As shown in results of descriptive statistics in Table 6.1, the leverage of banks in Ethiopia has a mean value of 87% and median value of 88.6%. The leverage of banks ranges from the minimum of 45.5% to the maximum of 96.3%, with the standard deviation of 6.6%. The result implies that the banking firms are quite leveraged and that the observed leverage relatively clusters around the

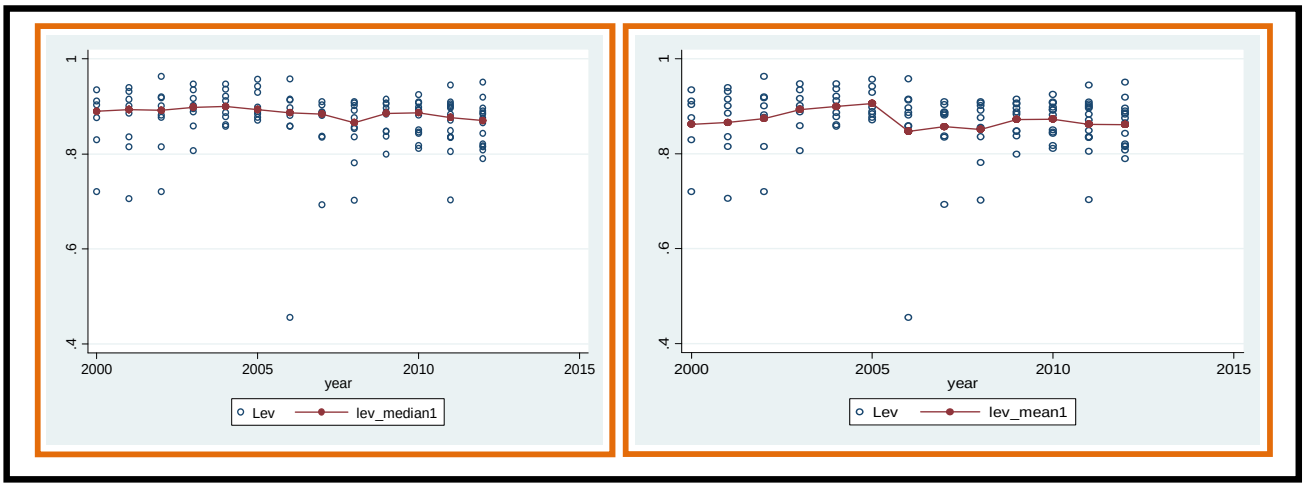
[34] As the determinants of capital structure, minimum capital requirement and regulatory pressure for capital adequacy and, as the determinant of the rate of adjustment, ownership of banks are the dummy variables, and hence, not included in the descriptive statistics.

[35] All variables cover the panel data set of 124 observations. However, the loss of some observations on two variables of growth (a) and earning volatility (b) can be traced to their measurement and unavailability of past data. To obtain the meaningful measures of growth and earnings volatility, at least 2 and at least 3 consecutive years of operation of banks are required, respectively.

mean (Bhattacherjee, 2012). This result is not surprising as it is natural to the banking business. In comparison to the documented past evidences in the banking firms of both developed and developing countries, these statistical results of the book leverage of banks in Ethiopia are also generally fairly alike. For example, the reported mean value and median value of the book leverage of the US and European banks were 92.6% and 92.7%, respectively (Gropp & Heider, 2009). Similarly, the documented results of the leverage of banks in Ethiopia are close to the reported mean value of 91.7% and median value of 92.7% of the leverage of banks in developing countries (Octavia & Brown, 2008). However, the mean book leverage of banks is relatively higher in comparison to the reported mean book leverage of nonfinancial firms. For example, the mean book leverage of nonfinancial firms in G-7 countries was 66% (Rajan & Zinglas, 1995). Similarly, it is relatively higher than the documented mean value of 51% leverage of nonfinancial firms in developing countries (Booth *et al.*, 2001).

The evolution of both mean and median leverage of the selected banks in Ethiopia over time has been represented in Figure 6.1 below. The median leverage of the banks was observed to be generally stable during a period time from 2000 to 2012. However, the mean value of the leverage of banks in Ethiopia fluctuates. There seems a sharp decline in the mean value of the leverage of banks approximately during the period between the years 2005 and 2008.

Figure 6.1. Evolution of Leverage over time



Panel A in Table 6.1 also reveals the summary statistics for the determinants of capital structure. In this regard, the summary statistics results show that the effective tax rate in the banks of Ethiopia has a mean value of 28.8% and median value of 29.3%. Even if unremarkable, the reported mean value is below the corporate tax rate of 30%. But, effective tax rate is found to be relatively widely dispersed. Specifically, the observed effective tax rate during the study period ranges from the minimum of 0.00 to the maximum of 91.1% with the standard deviation of 14.8%. This statistical result of the effective tax rate may reflect two basic reasons. First, in measuring the effective tax rate, any possible negative value and values greater than 1 are constrained to be zero (Sharp, 1995). Hence, the dispersion of effective tax rate may reflect the documented net loss and/or tax loss carried forward on some banking firms observed in different period(s). Second, the tax provision of banks also constitutes the tax to be paid on the interest earned on deposits in other banks at the fairly low tax rate of 5% (Income Tax Proclamation No 286/2002). Profitability of banks in Ethiopia has the mean value of 4.5% and median value of 5.1%. The reported result of the

profitability of banks ranges from the minimum of -1.7% to the maximum of 10%, with the standard deviation of 2%. In comparison to the documented evidences in the banking firms, the profitability of banks in Ethiopia is equally comparable to the reported mean value of 5.1% and median value of 4.9% of profitability in the US and European banks (Gropp & Heider, 2009), mean value of 6.7% and median value of 5.9% of profitability in the banks of selected developing countries (Octavia & Brown, 2008), and mean value of 5.38% and median value of 5.38% of profitability in the banks of Ghana (Amidu, 2007). However, the mean and median values of the profitability of banks in Ethiopia are far below the reported results for profitability of nonfinancial firms in both developed (Frank & Goyal, 2004) and developing countries (Booth *et al.*, 2001).

The growth opportunity of banks in Ethiopia has the mean value of 0.389 and median value 0.298. However, the result unveiled high variability of the growth opportunity of banks in Ethiopia. It ranges from the minimum value of -0.019 to the maximum value of 2.486, with the standard deviation value of 0.332. As it is expected, the documented low mean value of 0.019 and median value 0.015 of collateral values of assets, with the standard deviation of 0.012, reflect the relatively low fixed asset holding of banks in Ethiopia. It holds a high proportion of assets in the form of liquid assets and illiquid loans. The mean and median of sizes of the banks are found to be 21.476 and 21.312, respectively, with the standard deviation of 1.426. It ranges from the minimum value of 18.146 to the maximum value of 25.462. The earnings volatility of the banks has shown a mean value of 0.011, a median of 0.008 and a standard deviation of 0.010.

Panel B in Table 2 also shows the summary statistics for the determinants of the rate of adjustment. Generally, the deviation from the target has a mean value of 0.030 and a median value of 0.023. It ranges from the minimum of 0.002 to the maximum of 0.179, with the standard deviation of 3.1%. Besides, the mean and median values of liquidity are found to be 40.7% and 38.9%, respectively. The result on the liquidity of the banks ranges from the minimum of 0.142 to the maximum of 1.115, with the standard deviation of 13.4%.

The correlation matrix presented in Table 6.2 shows the existing correlation between the dependent variable and explanatory variables, as well as the correlations among the explanatory variables.

Table 6.2. Correlation Matrix

Var	Lev	Tax	Prof	Gro	Coll	Size	Evol	Mcr	Rgp	Dev	Liq	Bo
Lev	1.000											
Tax	0.432**	1.000										
Prof	0.315**	0.486**	1.000									
Gro	-0.411**	-0.306**	-0.187**	1.000								
Coll	-0.168	-0.128	-0.284**	0.071	1.000							
Size	0.571**	0.200**	0.316**	-0.418**	-0.489**	1.000						
Evol	-0.136	-0.177	-0.037	0.495**	-0.013	-0.255**	1.000					
McR	-0.013	0.415**	0.074	0.030	0.212**	-0.323**	-0.037	1.000				
Rgp	0.559**	0.350**	0.244**	-0.414	-0.034	0.391**	-0.379**	0.094	1.000			
Dev	-0.437**	-0.134	-0.202**	0.201**	0.099	-0.327**	0.227**	0.050	-0.291**	1.000		
Liq	-0.401**	-0.409**	-0.312**	0.267**	-0.116	-0.095	0.286**	-0.206**	-0.414**	0.056	1.000	
Bo	-0.421**	-0.182**	0.057	0.370**	-0.003	-0.475**	0.085	-0.030	-0.303**	0.098	0.213**	1.000

Note: 1. Lev: *is one minus the ratio of equity capital to total assets of banks, in book values.* ***Tax:*** *is the ratio of tax paid to net income before tax.* ***Prof:*** *is earning before interest and taxes on total assets.* ***Gro:*** *is the percentage of change in total assets of banks,* ***Coll:*** *the ratio of tangible assets to total asset.* ***Size:*** *is the natural logarithm of total assets.* ***Evol:*** *is the standard deviation of return on asset over the past consecutive three years.* ***McR:*** *is the dummy variable for the minimum paid up capital regulation.* ***RgP:*** *is the dummy variable for regulatory pressure for capital adequacy.* ***Dev:*** *is the absolute value of the difference between observed leverage and target leverage.* ***Liq:*** *is the ratio of liquid assets to total assets.* ***Bo:*** *is the dummy variable for ownership of banks that takes a value of 1 if private and zero, otherwise.* ***2.*** *Correlation coefficients: are statistically *** significant at 1% significance; ** significant at 5% significance; and * significant at 10% level.*

As shown in Table 6.2, the effective tax rate is positively correlated with the leverage of banks. Further, the variables of profitability, size of banks and the regulatory pressure for capital adequacy were found to be statistically significant and positively correlated with the leverage of banks. However, the growth opportunities were found to be negatively correlated with leverage. Similarly, the leverage of the Ethiopian banks under analysis was found to be negatively correlated with their deviation from the target, liquidity and ownership.

Moreover, in the correlation matrix provided in Table 6.2, large banks were also found to be enjoying relatively lower growth opportunities and lower collateral value of assets; and these banks were more profitable and less prone to earning volatility, were facing low regulatory pressure for capital adequacy and publicly owned. Further, the growth opportunity of banks is positively correlated with the earnings volatility.

6.2.1.2. Empirical Results of Static Panel Model Estimations

This section covers the statistical analysis in estimations of the specified static panel data model equation (1). The specified static panel model relates the leverage of banks, as the dependent variable, with a set of explanatory variables—corporate finance set of determinants and pertinent regulatory forces. The corporate finance set of determinants are supposed to capture the factors predicted in the tradeoff and the pecking order theoretical models of capital structure, including effective tax rate, profitability, growth, collateral values of assets, size and earnings volatility. Moreover, the pertinent regulatory forces include the minimum paid up capital regulation and the regulatory pressure on the capital adequacy dummy variables. Hence, estimation of the static panel

model equation (1) provides empirical results for investigating the determinants of the capital structure of banks within a static framework. Specifically, the estimation result of the specified static panel model is closely linked with the first and the second sub-questions (specific objectives) and the formulated first and second hypotheses of the research. To this end, this subsection describes the comparisons in the selection of appropriate estimation techniques for the specified panel model and the assumption/specification tests, and then it discloses the estimation results.

A) Comparison and Selection of Estimation Techniques

In estimating the specified static panel model, the study compared three possible estimators, including the pooled OLS, random effect and fixed effect estimators, in order to choose the appropriate estimator, as shown in Table 6.3. These estimators are valid and efficient under specific assumptions. Hence, the study primarily tested the presence of unobserved bank-specific effect. In the presence of unobserved effect, the study also tested the presence of correlations between unobserved bank-specific effect and explanatory variables specified in the model.

In testing the presence of unobserved bank-specific effect, the study used the Breusch & Pagan Lagrange Multiplier (LM) test. This test helps to compare the pooled OLS and the panel data model estimators (random effect or fixed effect estimators) (Wooldridge, 2002; Green, 2003). The test result revealed the LM test statistic of 6.75 ($p > \chi^2 = 0.010$). This implies that the test rejects the null hypothesis that the unobservable bank-specific effect is not relevant to explain the dependent variable at the level of 1% statistical significance. As a result, due to the omitted variable bias in neglecting the unobservable effect, the pooled OLS is not an efficient estimator (Wooldridge,

2002). This implies that the static panel data model estimator (either the random effect or the fixed effect estimator) is preferred to the pooled OLS estimator (Wooldridge, 2002).

Moreover, in testing the presence of correlations between the unobserved bank-specific effect and the explanatory variables, the study employed the Hausman specification test (Wooldridge, 2002; Green, 2003). The Hausman test helps to compare the random effect and fixed effect estimators (Wooldridge, 2002; Green, 2003). To this end, the test result revealed the Hausman test statistic of 60.95 ($p > \chi^2 = 0.0000$). The result implies that the Hausman test rejects the null hypothesis that the unobservable bank-specific effects are not correlated with the regressors at 1% level of statistical significance (Green, 2003). Thus, the fixed effect panel model estimator was chosen as an appropriate estimator for the static panel model equation rather than random effect estimator.

B) Assumption Testing

In examining the validity of the assumptions of the chosen fixed effect estimator, different tests have also been conducted. Firstly, the Variance Inflation Factor (VIF) has been used to test the possible multicollinearity problem. The presence of the possible high correlations among the independent variables may imply the presence of the multicollinearity problem. As it is difficult to isolate the separate effect of the regressor on the dependent variable, multicollinearity may result in inefficient estimates (Gujarati, 2004). Specifically, in the presence of multicollinearity, estimations may lead to inflated variance–covariance(Wooldridge, 2002). In addition, it may results in the high measure-of-goodness-fit, given few significant coefficients (Gujarati, 2004). Hence, the use of the Variance Inflation Factor (VIF) is intended to capture the extent to which the variance of estimators has been inflated due to the correlations in regressors (Gujarati, 2004). As a rule of

thumb, a VIF greater than 10 indicates the presence of the problem of multicollinearity (Gujarati, 2004). In the light of this, the results of the VIF test showed that the mean VIF for all the variables included in the model is 1.51, which confirms the absence of the multicollinearity problem (Gujariti, 2004; Ziad, 2009). The study also tested for the possible multicollinearity problem based on the scrutiny of the correlation matrix as depicted in Table 6.2 above. In using the correlation matrix, the presence of high correlations of the independent variables indicates the presence of the problem of multicollinearity (Gujaritie, 2004). As a rule of thumb, if the correlation between explanatory variables is found to be more than 0.8, it indicates the presence of a multicollinearity problem (Gujariti, 2004; Anderson *et al.*, 1999, cited in Ziad, 2009). Here, the correlation matrix presented in Table 6.2 again confirms the absence of the multicollinearity problem as the correlation between regressors was found to be lower than 0.6.

Secondly, as the present study uses the panel data set, it may be prone to the problems of heteroskedasticity. Hence, suitably to panel data set, testing for the possible presence of heteroskedasticity has been conducted based on the Modified Wald test for group-wise or panel heteroskedasticity. Then, on the basis of the test result, the Modified Wald test for group-wise or panel heteroskedasticity rejects the null hypothesis of homoskedasticity at 1% statistical significance level, in favor of the alternative hypothesis for the presence of heteroskedasticity. Thirdly, the panel data set may also face a problem of autocorrelation. Then, based on its appropriateness to the panel data set, the study used the Wooldridge Test for autocorrelation. As the result, the Wooldridge Test for autocorrelation in panel data rejects the null hypothesis of no-first-order autocorrelation at 1% statistical significance level. It implies that there exists a serial correlation. In

this respect, following the insights provided by Peterson (2007), it is possible to observe that standard errors are robust and clustered at the bank level in estimations to deal with the problems of heteroskedasticity and serial correlations (Wooldrdge, 2002; Green, 2003; Gropp & Heider, 2009). Further, as the regression estimation depends on the normally distributed residuals, the study also tested the normality of the residuals (*see* Annex II). In doing so, first, residual plots have been conducted, and the plot results do not reveal extreme outliers (Cameron & Trevid, 2009). The same also holds in the normal probability (P-P) plot, where the distribution of residuals was found to be normal, though not perfectly. Lastly, despite the fact that the initial test results failed to accept the null hypothesis of the Shapiro Wilk test, the second test results failed to reject the null hypothesis that residuals (errors) are normally distributed (P value of 0.12946) in windorizing the outliers (Field, 2009)[36].

C) Estimation Results

Table 6.3 below depicts the chosen fixed effect estimation results of the static panel regression model specified to examine the determinants of the capital structure of Ethiopian bank in a static framework. However, for the purposes of comparing and checking robustness, the estimation results of the pooled OLS and random effect estimators are also shown along with the fixed effect estimation results.

[36] The study also tested the linearity of the static panel model based on a scatter plot. Accordingly, the unreported scatter plot reveals an acceptable degree of linearity (Field, 2009).

Besides, to capture the possible unobserved bank-invariant time-specific effects related to the dynamics of macroeconomic factors and regulatory frameworks, other than capital regulation, the study also estimates a two-way fixed effect model. A two-way fixed effect model constitutes both the unobserved firm effect and unobserved time effect. In this estimation, the possible presence of unobservable time effect and the relevance of a time-fixed effect dummy variable have been examined using the joint test. The test result disclosed the F statistic of 32.48 (p>F= 0.0000), which rejects the null hypothesis that all year dummy coefficients are jointly equal to zero. Hence, the unobserved time effects are also considered in the fixed effect estimation. However, for tractable comparisons, the estimation results of the pooled OLS, random effect model and fixed effect model estimators (for both without and with time effects) are presented in Table 6.3 below. Moreover, the null hypothesis for joint insignificance of all coefficients of the estimated parameters has been rejected in the Wald and F test at 1% statistical significance level.

Table 6.3. Estimation Results of Static Panel Model Equation

Dependent Variable : Leverage	Pooled OLS	Random Effect		Fixed Effect	
Independent Variables	OLS_rob	RE_rob	RE_robT	FE_rob	FE_robT
Effective Tax Rate	0.0875***	0.0875***	0.0647***	0.0890**	0.0753***
	(0.0279)	(0.0279)	(0.0184)	(0.0338)	(0.0222)
Profitability	-0.7964***	-0.7964***	-0.1917	-1.0566***	-0.5763**
	(0.2607)	(0.2607)	(0.2007)	(0.3495)	(0.2394)
Growth	-0.0225*	-0.0225*	-0.0042	-0.0143**	-0.0123*
	(0.0122)	(0.0122)	(0.0116)	(0.0153)	(0.0170)
Collateral Values	0.2719	0.2719	0.2169	-0.6793	-0.8404
	(0.3472)	(0.3472)	(0.2936)	(1.0011)	(0.7023)
Size	0.0132***	0.0132***	0.0174***	0.0018	0.0154
	(0.0027)	(0.0027)	(0.0020)	(0.0052)	(0.0141)
Earning Volatility	0.9671*	0.9671**	1.0148**	0.0293	-0.1828
	(0.4862)	(0.4862)	(0.4415)	(0.4448)	(0.3931)
Minimum Capital Regulation	-0.0087	-0.0087	0.0114	-0.0244***	0.0151
	(0.0113)	(0.0113)	(0.0186)	(0.0069)	(0.0425)
Regulatory pres for cap adequacy	0.0357***	0.0357***	0.0481***	0.0228***	0.0349***
	(0.0089)	(0.0089)	(0.0081)	(0.0068)	(0.0078)
Constant	0.5780***	0.5780***	0.4248***	0.8732***	0.5260
	(0.0733)	(0.0733)	(0.0565)	(0.1167)	(0.3185)
Observation	109	109	109	109	109
R^2	0.5612			0.7554	0.8266
Adj. R^2	0.5261			0.6964	0.7536
LM ($\chi 2$) (P> χ^2)		6.73***(0.010)			
Hausman (P> χ^2)		60.95 (0.000)			
Wald($\chi 2$) (P> χ^2)		656.79***(0.000)	629.59***(0.000)		
F(P> χ^2)	82.10***(0.000)			7.22***(0.001)	4.80***(0.000)
Root MSE	0.02857			0.0229	0.0206
Modified Wald test for panel heteroskedasticity $\chi 2$ (P> χ^2)				1.1e+30 (14)(0.0000)	
Wooldridge test for AR F(1,8) (P> χ^2)				86.745(0.0000)	
Bank effect	No	Yes	Yes	Yes	Yes
Year	No	No	Yes	No	Yes

Notes*: 1.* ***Leverage*** *is one minus the ratio of equity capital to total assets of banks, in book values.* ***Effective tax rate*** *is the ratio of tax paid to net income before tax.* ***Profitability*** *is earning before interest and taxes over total assets.* ***Growth:*** *the percentage of change in total assets of banks.* ***Collateral*** *is the ration of tangible assets to total asset.* ***Size*** *is the natural logarithm of total assets.* ***Earning Volatility*** *is the standard deviation of return on asset over the past consecutive three years.* ***Minimum Capital Regulation:*** *is the dummy variable for the minimum paid up capital regulation.* ***Regulatory Pressure for cap adequacy:*** *is the dummy variable for regulatory pressure for capital adequacy. 2. The LM (χ^2) tests the null hypothesis that unobserved firm effects are not relevant in explaining the dependent variable. 3. The Hausman (χ^2) tests the null hypothesis that unobserved firm effects are not correlated with the explanatory variables. 4. The Wald (χ^2) tests the null hypothesis of non-significance as a whole of the parameters of the explanatory variables. 5. The F tests the null hypothesis of non-significance as a whole of the estimated parameters. 6. Clustered Robust Standard errors are in brackets. 7. Coefficients: are statistically *** significant at 1% significance; ** significant at 5% significance; and * significant at 10% level.*

The estimation results depicted in Table 6.3 revealed important findings. Firstly, it is noteworthy to point out that the model fits the data well, whereby R^2 ranges from 75.5% to 82.6%. The documented R^2 looks reasonable because it is higher than a simple pooled OLS, thereby indicating the presence of omitted variable (Wooldridge, 2002; Green, 2003). More specifically, R^2 declines by 27% in dropping of both the unobserved bank-specific effect and time-specific fixed effect and it declines by around 19.3% in dropping unobserved time effect alone. In comparison to the previous empirical evidence on the subject, the documented R^2 is closely similar to the reported R^2 of 72% in US and European banks (Gropp & Heider, 2009) and R^2 of 77.2% in the banks of selected developing countries (Octavia & Brown, 2008). Besides, in analyzing the coefficients of explanatory variables, the t–value and p-value of the estimation result, significant factors or determinants of capital structure can be identified.

In the chosen fixed effect estimation, the coefficient of effective tax rate was found to positive and statistically significant at 5% level (t-value of 2.64 and p-value of 0.021). This operational sign supports the prediction of the tradeoff theory. Additionally, the coefficient of the profitability of banks was found to be negative and statistically significant at 1% level (t-value of -3.02 and p-value of 0.010). Hence, the sign of the coefficient of profitability is in accordance with the prediction of the pecking order theoretical model. Similarly, the growth opportunities of banks were found to be statistically significant at 5% level (t-value of -2.39 and p–value of 0.020) and negatively related to the leverage of banks. This negative coefficient of growth is consistent with the prediction of the tradeoff theoretical model. As shown in Table 6.3, these significant coefficients of effective tax rate, profitability and growth also hold in regressing against leverage using a fixed effect estimator in the

presence of the time dummy variables. Moreover, these results are also consistent with the results of the pooled OLS and random effect estimators.

However, the negative coefficient of the collateral value of assets was found to be statistically insignificant (t-value of -0.68 and p-value of 0.509) in regressing against the leverage of banks in Ethiopia. This insignificant coefficient of collateral values also holds in estimating a two-way fixed effects model and is consistent with the pooled OLS and random effect estimations. Moreover, the coefficient of bank size was found to be positive but statistically insignificant in the estimations of both a one-way fixed effect model (t-value of 0.34 with p- value of 0.741) and a two-way fixed effect model. Similarly, the unexpected positive coefficient of earnings volatility was found to be statistically insignificant (t-value of 0.07 and p-value of 0.949) in regressing against the leverage of banks using the fixed effect estimations. Hence, the estimation results on the collateral value of assets, bank size and earnings volatility, in general, neither support the predictions of the tradeoff nor the pecking order theoretical models.

With respect to the pertinent regulatory factors, the fixed effect estimation result revealed that the coefficient of the dummy variable for a minimum capital requirement was found to be negative and statistically significant at 1% level (t-value of -3.55 and p-value of 0.004) in the banks of Ethiopia. Besides, the coefficient of the dummy variable for a peer-based regulatory pressure for risk-weighted capital adequacy was found to be positive and statistical significant at 1% level (t-value of 4.45 and p-value of 0.001). This positively significant effect of the regulatory pressure for capital

adequacy also holds in the fixed effect estimation with the unobserved time effect (t-value of 4.45 and p-value of 0.001)[37].

[37] However, the documented negative coefficient of regulatory pressure on the minimum capital regulation was found to be statistically insignificant (t-value of 0.35 and p-value of 0.728) in the fixed effect estimation with the time dummy variables. One plausible reason may be that the time dummy variable also captures the change in the minimum paid up capital requirement.

6.2.1.3. Empirical Results of Dynamic Panel Models Estimations

The previous section 6.2.12 of the study investigates the determinants of the capital structure of banks based on the estimation results of the static panel data regression model. In the chosen fixed effect estimator of the static panel model, the leverage of banks in Ethiopia was found to be negatively related with profitability, growth opportunities and dummy variable for a minimum paid up capital requirement. Besides, the effective tax rate and the dummy variable for peer-based regulatory pressure for capital adequacy were found to be positively related to the leverage of banks. However, these estimations have been conducted with the implicit assumptions that observed capital structure of banks is the target capital structure. Further, it assumes negligible adjustment costs, which may induce lags in the capital structure adjustment (Myers, 1984).

Consequently, the predictions of the target capital structure theory within a dynamic perspective, or the target capital structure adjustment theory, need to be tested. In the tradeoff theory, firms obtain the target capital structure at a point that balances the benefits of tax shield (Modigilani & Miller, 1963) and that reduces the agency problems of free cash flows (Jenson, 1986) with the costs of financial distress and agency costs of debt (Jenson & Meckling, 1976; Myers, 1977). In the banking firms, the possible regulatory cost is also considered as an additional cost to be tradeoff with the benefits of leveraging to maintain the target capital structure (Brewer *et al.*, 2008). Thus, firms will substitute debt for equity financing or vice versa to attain the desired capital structure. But target rebalancing may not be instantaneous. In the dynamic tradeoff or the target capital structure adjustment theory, firms set a long-run target capital structure and tend to adjust towards it through time (Myers, 1984; Fischer *et al.*, 1989).

The speed of adjustment towards the target depends on the existing adjustment costs and the benefits of adjustment towards the target (or the costs of deviations from the target) (Fischer *et al.*, 1989; Flannery & Hankins, 2007). Thus, if adjustment costs are excessively high, firms may take a long excursion from their target (Myers, 1984). They tend to adjust towards the target if the benefits of adjusting towards the target outweigh the adjustment costs (Flannery & Hankins, 2007). In addition, in target adjustment, overleveraged (undercapitalized) firms will reduce their debt financing or increase their equity capital financing (Flannery & Hankins, 2007). On the contrary, underleveraged (overcapitalized) firms will increase debt financing or decrease equity financing during rebalancing (Flannery & Hankins, 2007). Hence, if adjustment costs and benefits of adjustment differ between overleveraged firms that decrease leverage (or increase equity financing) and underleveraged firms that increase leverage (or, decrease equity financing), the target capital structure adjustment may be asymmetrical (Byoun, 2008). Further, adjustment costs may be firm-specific (Elsas & Florysiak, 2011). Firms having different characteristics may face adjustment costs differently (Flannery & Hankins, 2007). As a result, there may be a cross-sectional heterogeneity in the speed of adjustment towards the target (Elsas & Florysiak, 2011; Dang *et al.*, 2012).

Thus, this subsection constitutes the empirical results with respect to the dynamics of the capital structure adjustment of banks. To be more specific, the estimation results of the dynamic panel model for the symmetrical target capital structure adjustment have been first described. This description is, then, followed by the estimation results of the asymmetrical capital structure adjustment and the heterogeneous rate of adjustment model equations, respectively.

6.2.1.3.1. Symmetrical Capital Structure Adjustment Model Estimation

This subsection, as earlier, depicts the empirical results of the estimations of the specified symmetrical target capital structure adjustment model equation (3). As described earlier in subsection 5.2.1.4.2, the specified symmetrical capital structure adjustment model equation (3) considers the possible adjustment costs that may hinder the instantaneous target capital structure adjustment of firms. More specifically, it assumes that all firms tend to partially fill the gap between the observed capital structure and target capital structure at a constant speed of adjustment in a given period of time (Flannery & Hankins, 2007).

Therefore, in the estimation of the symmetrical dynamic panel model, the study uses both the Difference GMM and System GMM estimators, as shown in Table 6.6. In both the Difference GMM and System GMM estimations, the study was conducted using a single-stage procedure. This implies that all the factors in the static panel model are substituted for the target leverage, and the lagged leverage is also considered as an additional explanatory variable.

Then, unlike the static panel model estimators, the Difference GMM estimator is consistent and efficient in the presence of the lagged dependent variable and unobserved firm-specific effect. In the Difference GMM estimator, the symmetrical capital structure model equation was first differenced to remove unobserved firm-specific effect (Roodman, 2007). Next, it used the lagged past levels of endogenous variables as their instrument (Roodman, 2007; Cameron & Trieved, 2008). However, in the possible presence of the persistence of the predicted variable, the lagged levels of endogenous variables may produce a weak instrument for the first difference (Arellano & Bover, 1995; Boucinha, 2008). Hence, the study also used the System GMM estimator in order to

capture the possible problem of persistence in data series (Blundell & Bond, 1998; Boucinha, 2008). In the System GMM, the study simultaneously estimated the symmetrical capital structure adjustment model equation in levels and the first differenced symmetrical capital structure adjustment model equation (Blundell & Bond, 1998; Roodman, 2007). To this end, compared to the Difference GMM, the System GMM estimator uses additional moment conditions (Blundell & Bond, 1998). As a result, the System GMM may provide more efficient estimate than the Difference GMM (Blundell & Bond, 1998).

Furthermore, different specifications with respect to the exogeneity and/or endogeneity of regressors have been tested for both the Difference GMM and the System GMM estimations (Drobetz & Wanzedrid, 2006). However, the reported results of the Difference GMM and the System GMM estimations, as presented in Table 6.6, assume that the regulatory pressure variables are strictly exogenous and other regressors are endogenous variables (Drobetz & Wanzedrid, 2006; Boucinha, 2008).

Further, the consistency of the coefficient estimates of both the Difference GMM and the System GMM estimators depends on the absence of second-order autocorrelation of residuals with differenced equations (Arellano & Bover, 1995; Drobetz & Wanzedrid, 2006; Boucinha, 2008). Accordingly, the study tested second-order autocorrelation. The test results failed to reject the null hypothesis of no-second-order autocorrelation (m2) at 5% significance level for both estimations. Similarly, in checking the validities of the instruments used, the Sargan test result failed to reject the null hypothesis of the validity of instruments at 5% for the Difference GMM and System GMM

estimations. Besides, the Wald test statistic results revealed the rejection of the null hypothesis that all coefficients of the explanatory variables are jointly equal to zero at 1% significance level.

Table 6.4. Results of Symmetrical Dynamic Panel Model Estimations Using Difference GMM and System GMM estimators

Dependent Variable : Leverage	Difference GMM				System-GMM			
Independent Variable	Coef.	Robust Std. Err.	z	P>z	Coef.	Robust Std. Err.	z	P>z
Lagged Leverage	0.584	0.051	11.440	0.000	0.627	0.045	13.920	0.000
Effective Tax Rate	0.052	0.015	3.510	0.000	0.051	0.015	3.300	0.001
Profitability	-0.448	0.226	-1.980	0.047	-0.615	0.132	-4.670	0.000
Growth	0.010	0.009	1.140	0.253	0.010	0.010	0.990	0.324
Collaterals	-0.133	0.421	-0.320	0.753	0.050	0.197	0.250	0.799
Size	-0.006	0.002	-2.450	0.014	0.001	0.002	0.600	0.549
Earnings volatility	-0.389	0.433	-0.900	0.369	0.019	0.308	0.060	0.951
Minimum Capital Regulation	-0.015	0.006	-2.340	0.019	-0.003	0.008	-0.370	0.712
Regulatory pressure for cap adequacy	0.005	0.002	2.590	0.010	0.005	0.003	1.620	0.104
Constant	0.498	0.047	10.510	0.000	0.309	0.055	5.610	0.000
Observation	91				105			
Wald($\chi2$)	9571.27 (9) (P> $\chi2$=0.0000)				2968.28 (9) (P> $\chi2$=0.0000)			
Sargan ($\chi2$)	91.29464 (82) (P> $\chi2$= 0.2261)				179.1326 (167) (P> $\chi2$= 0.2468)			
m1	-2.2965 (P> z=0.0216)				-2.3281 (P> z= 0.0199)			
m2	-1.7682 (P> z= 0.0770)				-1.721 (P> z= 0.0853)			

Notes: *1. **Leverage** is one minus the ratio of equity capital to total assets of banks, in book values. **Effective tax rate** is the ratio of tax paid to net income before tax. **Profitability** is earning before interest and taxes over total assets. **Growth**: the percentage of change in total assets of banks. **Collateral** is the ration of tangible assets to total asset. **Size** is the natural logarithm of total assets. **Earning Volatility** is the standard deviation of return on asset over the past consecutive three years. **Minimum Capital Regulation:** is the dummy variable for the minimum paid up capital regulation. **Regulatory Pressure for cap adequacy:** is the dummy variable for regulatory pressure for capital adequacy.* 2. *The Wald ($\chi2$) tests the null hypothesis of overall non-significance of the parameters of the explanatory variables. 3. The Sargan ($\chi2$) tests the null hypothesis of significance of the validity of the instruments used. 4. The m1 tests the null hypothesis of the absence of the first-order autocorrelation. 5. The m2 tests the null hypothesis of the absence of the second-order autocorrelation. 6. Coefficients: are statistically *** significant at 1% significance; ** significant at 5% significance; and * significant at 10% level.*

As shown in Table 6.4, the estimation results of the symmetrical target capital structure adjustment model reveal a positive coefficient of a lagged leverage that is statistically significant at 1% level. This holds true in both the Difference GMM and the System GMM estimators. These estimation results are closely linked with the third research sub-question/specific objective/hypothesis formulated for the study. Specifically, these results reject the null hypothesis that banks do not have target capital structure that adjusts towards it dynamically. As depicted in Table 6.4, the coefficient of lagged leverage was found to be 0.584 and 0.627 in the Difference GMM and the System GMM estimations, respectively. These results imply that the partial speed of adjustment of 41.6% (λ=1-0.584) documented in the Difference GMM lies closer to the speed of adjustment of 37.3 % (λ=1-0.627) documented in the System GMM. Hence, the average partial speed of adjustment of banks in Ethiopia towards their target was found to be 39.45% per annum (Drobetz *et al.*, 2013).

The estimation results presented in Table 6.4 also provide evidences for the dynamic analysis of the determinants of capital structure. In this regard, both the Difference GMM and System GMM estimation results consistently reveal the existence of positively significant coefficient of effective tax rate in regressing against leverage in the dynamic framework. These coefficient estimates show the short-term impact of the effective tax rate on the leverage of banks (Antoniou *et al.*, 2008; Flannery & Rangan, 2008). The long-run coefficient of the effective tax rate equals the estimated coefficients of the effective tax rate in the partial adjustment model divided by the speed of adjustment coefficient λ. Specifically, the long-run coefficient of the effective tax rate would be 12.5% and 13.7% for the Difference and the System GMM estimators, respectively. This result confirms the finding documented in the static panel model estimation.

Besides, the coefficients of profitability were found to be negative and statistically significant at 5% and 1% levels in the Difference GMM and System GMM estimations, respectively. Once again, this evidence on profitability is also consistent with the static panel model estimation result. However, this coefficient estimate indicates a short-run effect of profitability on the leverage of banks in Ethiopia. As pointed out earlier, its long-run effect depends on the documented speed of adjustment towards the target. In the Difference and the System GMM estimations, the coefficients of profitability of banks were found to be -0.448 and -0.615, respectively. The long-run coefficients of profitability would, therefore, be -1.077 and -1.649, respectively.

However, the coefficients of growth, collateral values of assets and earnings volatility were found to be insignificant, consistently in estimating the symmetrical dynamic panel model equation using the Difference and the System GMM estimators. Then, although this result is contradiction with growth opportunities, these insignificant coefficients of collateral values of assets and earnings volatility also corroborate the static panel model estimation results. The coefficient of size was found to be negative and statistically significant at 5% level in the Difference GMM; and yet, size was found to be still insignificant in the System GMM estimations.

Finally, consistent to the findings in the static panel model fixed effect estimation, the coefficient of the minimum capital regulation dummy variable was found to be statistically significant at 5% in the Difference GMM estimation. On the contrary, the coefficient of the regulatory pressure for capital adequacy was found to be positive and statistically significant at 1% in the Difference GMM estimation. However, the coefficients of the dummy variables for both the minimum capital

regulation and regulatory pressure for capital adequacy were found to be insignificant in the System GMM estimation.

6.2.1.3.2. Asymmetrical Target Capital Structure Adjustment Model Estimation

This subsection presents the empirical results for the estimations of asymmetrical target capital structure adjustment model equation (5). Unlike the symmetrical target capital structure adjustment model that implicitly assumes a homogeneous speed of adjustment, the target capital structure adjustment may be asymmetrical for overleveraged and underleveraged firms (Byoun, 2008; Drobetz *et al.*, 2013). As mentioned earlier, overleveraged firms are expected to reduce leverage or increase equity financing within target capital structure adjustment dynamics (Flannery & Hankins, 2007). On the other hand, underleveraged firms are expected to increase leverage or decrease equity financing to revert towards the target (Flannery & Hankins, 2007; Byoun, 2008). Hence, the adjustment costs of increasing equity financing for overleveraged firms may differ from the adjustment costs of increasing debt financing for underleveraged firms (Flannery & Hankins, 2007; Byoun, 2008). Besides, the benefits of reducing leverage in overleveraged firms may be asymmetrical to the benefits of increasing leverage in underleveraged firms (Faulkender *et al.*, 2012; Drobetz *et al.*, 2013).

In the light of the above idea, the present study estimated the dynamic panel model equation (5) that considers the possible asymmetric target capital structure adjustment for overleveraged and underleveraged banks, as shown in Table 6.5. In this estimation, the study used two interactive variables ($TDE_{it}.D_{it}^{above}$ and $TDE_{it}.D_{it}^{below}$). These interactive variables would allow the speed of

adjustment to vary between the overleveraged and underleveraged banks in estimations (Byoun, 2008). In doing so, the study also used a two-stage procedure (Fama & French, 2002; Byoun, 2008; Drobetz *et al.*, 2013). In the first stage, the fitted value of the target leverage for each bank-year has been obtained by using the fixed effect estimation coefficients of factors in the static panel model (Drobetz *et al.*, 2013). In the second stage, the deviation from the target leverage (***TDE***) has been computed as the difference between the fitted value of the target leverage obtained in the first stage and the actual lagged leverage ratio for each bank-year (Byoun, 2008; Drobetz *et al.*, 2013). These procedures allow to specify indicator variables (D_{it}^{above} and D_{it}^{below}) and interactive variables ($TDE_{it}.D_{it}^{above}$ and $TDE_{it}.D_{it}^{below}$).

Then, once the indicator and interactive variables have been specified, the study also makes a statistical comparison of the pooled OLS, random effect and fixed effect estimators. In this regard, the study used the Lagrange Multiplier (LM) test to compare the pooled OLS and panel data model estimators (random effect and fixed effect). As shown in Table 6.5, the LM test statistic result rejects the null hypothesis that that unobservable individual effect is not relevant to explain the change in leverage. Hence, the panel model estimators are preferred to the pooled OLS. Besides, to compare the random effect and fixed effect estimators, the study used the Hausman test. As a matter of fact, the Hausman test rejects the null hypothesis that unobserved effect is uncorrelated with explanatory variables at 1% significance level. For this reason, the fixed effect estimator is favored over the random effect estimator. However, for the purpose of comparison, Table 6.5 depicts the results of the pooled OLS, random effect and fixed effect estimators. Further, the null hypothesis of the joint insignificance of all coefficients of the estimated parameters has been rejected in the Wald and F test at 1% statistical significance level.

Table 6.5. Estimation Results of Asymmetrical Capital Structure Adjustment Model

Dep. Variable:	Change In Leverage(Δ Levit)											
Independent variables	Pooled OLS				Random effect				Fixed Effect			
	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	z	P>z	Coef.	Std. Err.	t	P>t
$TDE_{it}.D_{it}^{above}$	0.03521	.15215	0.23	0.821	0.03521	.152152	0.23	0.817	0.54683	.237084	2.31	0.038
$TDE_{it}.D_{it}^{below}$	0.49954	.03813	13.10	0.000	0.49954	.0381252	13.10	0.000	0.51305	.036470	14.07	0.000
Constant	-0.00418	.00369	-1.13	0.278	-0.00418	.0036889	-1.13	0.257	0.00212	.003152	0.67	0.512
Observation	109				109				109			
R^2	0.4730								0.6018			
Adjusted R^2	0.4631								0.5375			
LM ($\chi 2$) test (P> χ^2)					11.29(0.0015)							
Hausman($\chi 2$)Test(P>χ^2)					27.52**(0.0000)							
Wald($\chi 2$) (P> χ^2)					273.69 (0.0000)							
F (P> χ^2)	136.84***(0.0000)								94.23***(0.0000)			
Root MSE	.01837				.01705				0.0171			

*Notes: 1. TDE_{it} is the deviations from the target leverage. D_{it}^{above} is the dummy variable that equals one if overleveraged and, zero otherwise. D_{it}^{below} is the dummy variable that equals one if underleveraged and, zero otherwise .2. The LM (χ^2) tests the null hypothesis that unobservable individual effects are not relevant to explain the dependent variable. 2. The Hausman test has χ^2 distribution and tests the null hypothesis that unobservable individual effects are not correlated with the explanatory variables. 3. The Wald test has χ^2 distribution and tests the null hypothesis of non-significance as a whole of the parameters of the explanatory variables. 4. The F test has normal distribution and tests the null hypothesis of non-significance as a whole of the estimated parameters. 5. Robust Standard errors (clustered at bank level). 6. Coefficients: are statistically *** significant at 1% significance; ** significant at 5% significance; and * significant at 10% level.. 7. The estimates include constant term.*

As depicted in Table 6.5, the coefficients of both overleveraged and underleveraged banks were found to be statistically significant in the chosen fixed effect estimation. This estimation result addresses the fourth sub-question/specific objective/hypothesis of this research. In effect, the result specifically, rejects the null hypothesis that the dynamics of the target capital structure adjustment is not asymmetrical for overleveraged and underleveraged banks.

As presented in Table 6.5, the coefficient of underleveraged banks was found to be positive (φ_2= 0.51305) and statistically significant at 1% level in the fixed effect estimation. Consistently, this positive coefficient of underleveraged banks also holds both in the pooled OLS and random effect estimations. Similarly, the coefficient of overleveraged banks was found to be positive (φ_1=0.54683) and statistically significant at 1% level in the chosen fixed effect estimation. However, the coefficient of overleveraged banks was found to be higher than the coefficient of underleveraged banks. Hence, the result implies that overleveraged banks tend to adjust towards the target more rapidly than underleveraged banks in Ethiopia.

6.2.1.3.3. Estimations of Model of Heterogeneous Capital Structure Adjustment

This subsection contains the empirical results in estimations of the dynamic model of heterogeneous target capital structure adjustment, as given in equation (8). Unlike the asymmetrical target capital structure adjustment model estimation that emphasizes only the relative target deviation, this dynamic panel model of heterogeneous capital structure adjustment estimation is helpful to examine the possible cross-sectional heterogeneity in the speed of adjustment, with respect to a broad set of bank characteristics (Elsas & Florysiak, 2011).

To that end, in this dynamic model estimation, the speed of adjustment has been endogenized over a range of bank-specific factors (Drobetz & Wanzenried, 2006). These determinants of the speed of adjustment include deviation (absolute) from target leverage, size, growth, liquidity, regulatory pressure for capital adequacy and ownership of banks, as reported in Table 6.6(A). However, to check for the robustness and possible efficiency of the heterogeneous capital structure adjustment model, the factors that were found to be significant in the static panel model (effective tax rate and profitability) were also included in the heterogeneous speed of adjustment, as shown in Table 6.6(B). Besides, these determinants were considered one at a time for the estimation to be tractable (Drobetz & Wanzenried, 2006).

Further, in estimations of the heterogeneous capital structure adjustment model equation (8), the study also used the Difference GMM and the System GMM estimators. In doing so, different specifications concerning the exogeneity and/or endogeneity of the explanatory variables have been tested (Drobetz & Wanzenried, 2006; Cameron & Trivedi, 2009). However, the results reported in Table 6.6 assume that all of the determinants are endogenous (Drobetz & Wanzenried, 2006). Besides, the consistency of coefficient estimates in both the Difference GMM and the System GMM estimators depends on the absence of second-order autocorrelation (m2). To this end, the second-order autocorrelation test (m2) has been conducted. The test results failed to reject the null hypothesis of no-second-order autocorrelation at 5% in all model specifications. Nevertheless, these test results of second-order autocorrelation have been maintained, by including the unreported coefficient of a second lag of the dependent variable (Drobetz & Wanzenried, 2006). This second lag of leverage has been included in the model only for a statistical reason (Drobetz & Wanzenried, 2006). Besides, in checking the validities of instruments used, the Sargan test result

failed to reject the null hypothesis of instruments validity at 5% in both the difference and system GMM estimations. Furthermore, the Wald test statistic results reject the null hypothesis that all coefficients of the explanatory variables are jointly equal to zero at 1% significance level in all model estimations.

Table 6.6(A). Estimation Results of Model of Capital Structure Adjustment with Heterogeneous Speed of Adjustment

Dep. Variable :Leverage	Difference GMM				System GMM			
Independent variable	Coef.	Robust Std. Err.	z	P>|z|	Coef.	Robust Std. Err.	z	P>|z|
$Lev_{i,t-1}$	.6050958	.1237084	4.89	0.000	.8277074	.0851869	9.72	0.000
$Lev_{i,t-1}$x Deviation	3.596437	.833959	4.31	0.000	3.255685	1.852638	1.76	0.079
Wald(χ2)	42178.26 (9) (P> χ^2=0.0000)				66114.45 (11) (P> χ^2=0.0000)			
Sargan (χ2)	77.3295 (73) (P> χ^2= 0.3422)				155.556 (160) (P> χ^2= 0.5845)			
m1	-2.4118 (P> z= 0.0159)				-2.5134 (P> z= 0.0120)			
m2	-1.0622 (P> z= 0.2881)				-1.2961 (P> z= 0.1950)			
$Lev_{i,t-1}$	2.887324	.5597205	5.16	0.000	1.742504	.7704109	2.26	0.024
$Lev_{i,t-1}$x Size	-.1046957	.028261	-3.70	0.000	-.0709433	.0281399	-2.52	0.012
Wald(χ2)	1486.65 (9) (P> χ^2=0.0000)				15086.92 (10) (P> χ^2=0.0000)			
Sargan (χ2)	79.33883 (73) (P> χ^2= 0.2860)				163.0212 (164) (P> χ^2= 0.5069)			
m1	-2.237 (P> z= 0.0253)				-2.3678 (P> z= 0.0179)			
m2	-1.77 (P> z= 0.0767)				-1.5839 (P> z= 0.1132)			
$Lev_{i,t-1}$	.7103824	.1435648	4.95	0.000	.9530533	.0938848	10.15	0.000
$Lev_{i,t-1}$x Growth	.1576097	.2021715	0.78	0.436	-.2335534	.159732	-1.46	0.144
Wald(χ2)	4079.25 (9) (P> χ^2=0.0000)				4373.99 (10) (P> χ^2= 0.0000)			
Sargan (χ2)	74.86692 (73) (P> χ^2= 0.4175)				153.047 (164) (P> χ^2= 0.7196)			
m1	-2.6872 (P> z= 0.0072)				-2.6111 (P> z= 0.0090)			
m2	-1.2392 (P> z= 0.2153)				-1.8122 (P> z= 0.0700)			
$Lev_{i,t-1}$	.4850085	.1156805	4.19	0.000	.7020243	.0649083	10.82	0.000
$Lev_{i,t-1}$x Liquidity	.2442868	.2527028	0.97	0.334	-.2203083	.1743852	-1.26	0.206
Wald(χ2)	8424.44 (10) (P> χ^2=0.0000)				5898.80 (10) (P> χ^2=0.0000)			
Sargan (χ2)	90.04923 (81) (P> χ^2= 0.2302)				183.1952 (172) (P> χ^2= 0.2654)			
m1	-2.2523 (P> z= 0.0243)				-2.3202 (P> z= 0.0203)			
m2	-1.6132 (P> z= 0.1067)				-1.7249 (P> z= 0.0846)			
$Lev_{i,t-1}$	.8591858	.1168031	7.36	0.000	.9229727	.0618184	14.93	0.000
$Lev_{i,t-1}$x Regulatory pres	-.2955906	.1052489	-2.81	0.005	-.1925058	.1101028	-1.75	0.080
Wald(χ2)	9630.00 (10) (P> χ^2=0.0000)				723155.56 (11) (P> χ^2=0.0000)			
Sargan (χ2)	76.40094 (72) (P> χ^2= 0.3391)				153.09 (154) (P> χ^2= 0.5056)			
m1	-2.0317 (P> z= 0.0422)				-2.2775 (P> z= 0.0228)			
m2	.25057 (P> z= 0.8021)				-1.3679 (P> z= 0.1713)			

$Lev_{i,t-1}$	.5615343	.0466685	12.03	0.000	.7592394	.0655013	11.59	0.000
$Lev_{i,t-1}$x Ownership	.134934	.0654098	2.06	0.039	.1051511	.0444655	2.36	0.018
Wald(χ2)	147281.58 (9) (P> χ^2=0.0000)				118673.59 (11) (P> χ^2=0.0000)			
Sargan (χ2)	75.61918 (73) (P> χ^2= 0.3939)				142.9531 (156) (P> χ^2= 0.7649)			
m1	-2.278 (P> z= 0.0227)				-2.3649 (P> z= 0.0180)			
m2	-1.7692 (P> z= 0.0769)				-1.181 (P> z= 0.2376)			

Table 6.6 (B)- Estimation Results of Model of Capital Structure Adjustment with Heterogeneous Speed of Adjustment

Dep. Variable :Leverage	Difference GMM				System GMM			
Independent variable	Coef.	Robust Std. Err.	z	P>|z|	Coef.	Robust Std. Err.	z	P>|z|
Lev i,t-1	.5997156	.1168885	5.13	0.000	.7994024	.0897062	8.91	0.000
Lev i,t-1x ETax	.4216078	.182954	2.30	0.021	.0978689	.1574004	0.62	0.534
Wald(χ2)	9631.50 (9) (P> χ2=0.0000)				3272.00 (9) (P> χ2=0.0000)			
Sargan (χ2)	68.09217 (63) (P> χ2= 0.3082)				145.6388 (145) (P> χ2= 0.4695)			
m1	-1.6977 (P> z= 0.0896)				-1.868 (P> z= 0.0618)			
m2	-1.4266 (P> z= 0.1537)				-1.2161 (P> z= 0.2240)			
Lev i,t-1	.4897552	.1381163	3.55	0.000	.7185683	.0941635	7.63	0.000
Lev i,t-1x Prof	3.260328	1.065399	3.06	0.002	.9157277	1.267392	0.72	0.470
Wald(χ2)	630.20 (9) (P> χ2=0.0000)				1248.60 (9) (P> χ2=0.0000)			
Sargan (χ2)	69.35428 (63) (P> χ2= 0.2719)				147.2223 (145) (P> χ2= 0.4329)			
m1	-1.6593 (P> z= 0.0970)				-1.8192 (P> z= 0.0689)			
m2	-1.2897 (P> z= 0.1972)				-1.2761 (P> z= 0.2019)			

Notes: *1. The Wald (χ2) tests the null hypothesis of overall non-significance of the parameters of the explanatory variables. 2. The Sargan (χ2) tests the null hypothesis of the significance of the validity of the instruments used. 3. The m1 tests the null hypothesis of the absence of first-order autocorrelation. 4. The m2 tests the null hypothesis of the absence of second-order autocorrelation. 5. All variables are defined in the same way as they are defined in Table 6.2.*

As reported in Table 6.6, estimation results of the dynamic panel model for heterogeneous capital structure adjustment reveal interesting results/findings. These estimation results are closely linked to the fifth sub-question/specific objective/ of the research, as presented/formulated in the first chapter. Specifically, these estimation results provide evidences to test the null hypothesis that the dynamics of the target capital structure adjustment is not heterogeneous across banks in Ethiopia, which differ in their characteristics (deviations from target, size, growth, liquidity and ownership) and regulatory pressure.

Then, as the concern of the study is to examine the possible cross-sectional heterogeneity in the rate of adjustment, Table 6.6 discloses only the coefficient estimates of the lagged leverage and interaction terms between the determinants of the speed of adjustments and lagged leverage (Drobetz & Wanzenried, 2006). Specifically, to investigate the heterogeneous target capital structure adjustment dynamics, the coefficient of interaction terms is examined. In interpreting the estimated result, the negative sign for interaction terms of lagged leverage and determinants of the speed of adjustment in the specified dynamic panel model need to be considered (Drobetz & Wanzenried, 2006).

In this regard, important findings can be identified with respect to the heterogeneity of target capital structure adjustment as reported in Table 6.6(A). Firstly, the effect of distance from target leverage (absolute deviation) on the speed of adjustment was found to be negative and statistically significant at 1% level and 10% level in the Difference GMM and System GMM estimations, respectively (Dang *et al.*, 2012). Besides, the relationship between the size of banks and the speed of adjustment was found to be positive and statistically significant at 1% and 5% in the Difference

GMM and the System GMM estimations, respectively (Flannery & Hankins, 2007; Byoun, 2008). Similarly, the effect of regulatory pressure for capital adequacy on the speed of adjustment was also found to be positive and statistically significant at 1% level and 10% level in the Difference GMM and the System GMM estimations, respectively. Further, the relationship between ownership of banks and speed of adjustment was found to be negative and statistically significant at 5% level in both Difference GMM and System GMM estimations.

However, the coefficient for interaction term of growth opportunities of banks and lagged leverage was found to be statistically insignificant consistently in both Difference GMM and System GMM estimations. Similarly, both estimation results also revealed an insignificant coefficient of the interaction between liquidity and lagged leverage of banks.

Further, the estimation results of the heterogeneous capital structure adjustment model presented in Table 6.6(B), using the factors that were found to be significant in the static panel model (effective tax rate and profitability), provide mixed evidences. In the Difference GMM estimation, the relationship between effective tax rate and speed of adjustment was found to be negative and statistically significant at 5% level. Similarly, the effect of profitability on the speed of adjustment was found to be negative and statistically significant at 5% level in the Difference GMM estimation. However, the coefficients of both effective tax rate and profitability were found to be statistically insignificant in the System GMM estimation.

6.2.2. Cross-Sectional Survey Results

This section primarily reports the cross-sectional survey results documented from the responses of the questionnaire distributed to the selected chief financial officers (CFOs) of banks[38]. Unlike the panel study that solely uses secondary data, the cross-sectional survey gathers firsthand information, in that the present study also collected firsthand data (from responses of the selected CFOs of bank firms in Ethiopia)[39] to examine the determinants and capital structure adjustment dynamics in multiple perspectives (De Jong & van Dijk, 2001; Beattie *et al.*, 2006).

Hence, the results of the cross-sectional survey responses are organized into two main subsections. The first subsection primary focuses on the survey results on the determinants of the capital structure decision of banks under study. The second subsection emphasizes the cross-sectional survey results on the target setting behavior and adjustment dynamics of banks.

6.2.2.1. Survey Results on Determinants of Capital Structure

The survey responses given to the questions on the determinants of capital structure of banks are presented in Table 6.7 and Table 6.8. Respondents were asked to rate both the relative importance of the factors related to the financial decision of banks (Table 6.7) and their views on the general statements regarding the factors in financing decision of banks (Table 6.8) (Beattie *et*

[38] As used in present study, CFOs is the "generic" name for selected individuals at the executive/senior management level of banks, who are likely to be knowledgeable and play an active role in the strategic financing decision of banks in question. In this respect, depending on the nature of the organizational structure of banks, it (CFOs) also represents Finance Directors, Finance managers, Fund managers, Treasurers and Controllers.

[39] Using continuous follow up and reminder of the respondents (CFOs), all the distributed questionnaires have been replied and returned.

al., 2006). All of the questions have been measured using a five-point Likert scale (Beattie *et al.*, 2006). Hence, based on the survey responses, the percentages of responses within each rank or rate categories and the mean scores of responses for each factor have been documented (Pinegar & Wilbricht, 1989). To investigate the possible differences of the survey results on the determinants of capital structure conditional on bank characteristics (size, liquidity and ownership), the study also used the non-parametric Mann-Whitney test.

These cross-sectional survey results are closely linked to the first and the second research sub-questions/specific objectives/ hypotheses of the study. Besides, these survey results would be useful to corroborate the findings regarding the determinants of capital structure of banks in the static panel model estimations.

Table 6.7. Relative Importance of Factors in Financial Decision of Banks

	Items	% of response within each rank					Mean	Size			Liquidity			Ownership		
		1	2	3	4	5		Small	Large	*U*	Low	High	*U*	Public	Private	*U*
a	The tax advantage of interest deductibility	14.3	14.3	23.8	42.9	4.8	3.095	3.182	3.000	53.00 (0.882)	2.667	3.267	33.00 (0.326)	3.500	2.933	36.00 (0.461)
b	The level of interest rates on deposits & other debts	9.5	4.8	14.3	33.3	38.1	3.857	3.909	3.800	52.00 (0.824)	4.000	3.800	41.50 (0.775)	4.500	3.600	28.50 (0.177)
c	Available tax economies related to other non-taxable allowance (such as depreciation)	19.0	19.0	19.0	38.1	4.8	2.905	3.273	2.500	36.00 (0.164)	2.500	3.067	32.00 (0.293)	3.500	2.667	28.00 (0.169)
d	Risk and costs of financial distress & insolvency	0.0	9.5	19.0	47.6	23.8	3.857	4.091	3.600	40.50 (0.274)	3.500	4.000	31.00 (0.243)	4.333	3.667	26.50 (0.123)
e	The volatility/changes in bank's earnings and cash flows	4.8	9.5	19.0	33.3	33.3	3.810	4.182	3.400	38.00 (0.212)	4.000	3.733	38.00 (0.570)	4.167	3.667	32.50 (0.310)
f	Size of free cash flows	0.0	4.8	14.3	61.9	19.0	3.952	4.182	3.700	31.00 (0.052)	4.000	3.933	44.50 (0964)	4.167	3.867	36.50 (0.446)
g	Financial flexibility or Profitability	0.0	4.8	9.5	42.9	42.9	4.238	4.273	4.200	50.00 (0.701)	4.167	4.267	39.50 (0.641)	4.167	4.267	39.50 (0.641)
h	Investment policy or Growth Opportunities	4.8	0.0	9.5	38.1	47.6	4.238	4.455	4.000	44.50 (0.419)	4.167	4.276	33.00 (0.307)	4.167	4.267	37.00 (496)
i	The consequences of breaching regulatory capital requirement	4.8	0.0	9.5	42.9	42.9	4.191	4.546	3.800	30.50 (0.060)	4.000	4.267	27.00 (0.127)	4.500	4.067	36.00 (0.446)
j	Capital held by your bank's peers	4.8	23.8	23.8	33.3	14.3	3.286	3.727	2.800	30.00 (0.069)	3.000	3.400	35.00 (0.421)	3.500	3.200	38.00 (0.573)
k	Change in the regulation & supervision framework	0.0	0.0	19.0	52.4	28.6	4.095	4.091	4.100	53.50 (0.908)	4.167	4.067	41.50 (0.765)	3.833	4.200	32.50 (0.285)

Notes: ***1.*** *Categories represent that 1-Not important, 2-Little important, 3- Fairly important, 4-Important and 5-Very Important.* ***2.*** *Means are calculated by assigning scores of 1 through 5 for rankings from "not important" to "very important," respectively, and by multiplying each score by the fraction of responses within each rank.* ***3.*** *U represents the Mann-Whitney test result with asymptotical significance 2 tailed in brackets.*

Table 6.8. Responses to General Statements about Factors in Financial Decision of Banks

	Items	% of response within each rank					Mean	Size			Liquidity			Ownership		
		1	2	3	4	5		Small	Large	*U*	Low	High	*U*	Public	Private	*U*
a	Use of deposits & other debts would decrease relative to equity if debt interest were no longer tax-deductible.	4.8	28.6	33.3	19.0	14.3	3.095	2.727	3.500	35.50 (0.155)	3.167	3.067	40.50 (0.717)	2.333	3.400	19.00 (0.036)
b	The decision to issue debt or equity is affected by the existence of tax loss carried forwards.	4.8	28.6	28.6	33.3	4.8	3.048	3.000	3.100	51.50 (0.797)	3.167	3.000	41.00 (0.745)	3.167	3.000	40.50 (0.715)
c	We issue common stocks to complement to risk management.	4.8	23.8	42.9	23.8	4.8	3.000	3.273	2.700	34.00 (0.118)	3.000	3.000	45.00 (1.000)	3.167	2.933	38.00 (0.568)
d	A bank issue shares, though present needs are not great, to build up a cushion against unexpected losses arising from material risks.	4.8	23.8	23.8	42.9	4.8	3.191	3.455	2.900	40.00 (0.264)	3.167	3.200	44.00 (0.934)	3.000	3.267	41.00 (0.742)
e	We issue debt when our recent profits are not sufficient to fund our activities.	4.8	28.6	28.6	33.3	4.8	3.048	3.182	2.900	46.50 (0.532)	3.167	3.000	40.50 (0.715)	3.167	3.000	40.50 (0.715)
f	We issue common stock when we are unable to obtain funds using other sources.	4.8	0.0	38.1	52.4	4.8	3.524	3.455	3.600	53.00 (0.875)	3.833	3.400	30.50 (0.208)	4.167	3.267	15.00 (0.009)
g	We issue debt when we have accumulated profits.	4.8	33.3	42.9	14.3	4.8	2.810	3.000	2.600	39.00 (0.231)	2.333	3.000	25.00 (0.098)	2.333	3.000	25.00 (0.098)
h	We issue common stock to finance long term business strategy or growth.	0.0	0.0	4.8	71.4	23.8	4.191	4.091	4.300	45.00 (0.372)	4.333	4.133	37.00 (0.430)	4.167	4.200	43.00 (0.844)
i	Given the regulatory capital requirement, we assess how much additional capital we should hold.	0.0	4.8	14.3	38.1	42.9	4.191	4.091	4.300	51.50 (0.791)	4.500	4.067	34.50 (0.379)	3.833	4.333	31.00 (0.241)
j	We assess capital needed to run the business & then, verify whether it meets regulatory requirement	4.8	9.5	4.8	57.1	23.8	3.857	4.091	3.600	50.00 (0.694)	3.833	3.867	42.50 (0.828)	3.833	3.867	42.50 (0.828)

Notes: *1. Categories represent that 1-Strongly disagree 2-Disagree, 3- Neutral, 4-Agree and 5-Strongly Agree. 2. Means are calculated by assigning scores of 1 through 5 for rankings from "strongly disagree" to " strongly agree" respectively, and by multiplying each score by the fraction of responses within each rank.* ***3. U*** *represents the Mann-Whitney test result with asymptotical significance 2 tailed in brackets.*

As per the survey results reported in Table 6.8 and Table 6.9, the focus of the five questions were on the perceived effect of taxation on the capital structure decision of banks (rows *a, b* and *c* of Table 6.7; rows *a* and *b* of Table 6.8). As a result, high percentage of respondents rated (mean rating=3.095) the tax advantage of interest deductibility as important and very important factors to be considered in capital structure decision of banks (row *a* of Table 6.7). Similarly, majority of respondents rated (mean rating=3.857) the level of interest rate of deposits and other debts of banks as important and very important factor in capital structure decision of banks (row *b* of Table 6.7). High percentages of respondents also agreed or strongly agreed with the statement that states the use of deposits and other debts would decrease relative to equity if debt interest were no longer tax deductible (mean rating=3.095; row *a* of Table 6.8). Besides, high percentage of the respondents showed their agreement to the statement that states capital structure decision of banks is affected by the existence of tax loss carried forwards (row *b* of Table 6.8). In general, these survey results validate the evidences documented on the static panel model estimations regarding the effect of effective tax rate on the capital structure decision of banks. However, the survey responses disregard the importance of tax economies for other non-taxable allowances such as depreciation as important factor in capital structure decision of banks (row *c* of Table 6.7)

The next four questions mainly focus on the perceptions of CFOs on the relevance of profitability and/or size of free cash flow on capital structure decision of banks (rows *f* and *g* of Table 6.7; rows *e* and *g* of Table 6.8). As per the survey results, most of the respondents revealed that size of free cash flow and profitability in capital structure decision of banks are important (rows *f* and *g* of Table 6.7). These survey results are also consistent with some of the respondents that responded that banks issue debt when they accumulate profits (row *g* of Table 6.8). It is, however, consistent

with majority of the respondents that agreed with the statement that states banks issue debt when profits are not sufficient to fund their activities (row *e* of Table 6.8). Similarly, around 57% of the respondents agreed with the statement that underscores banks issue common stock when they are unable to obtain fund from other sources (row *f* of Table 6.8). Further, CFOs were asked two questions if investment policy/growth opportunities are relevant to the capital structure decision of banks (row *h* of Table 6.7; row *h* of Table 6.8). Accordingly, the survey results revealed that high percentages of the respondents (75%) rated the importance and/or very importance of the investment policy or growth opportunities in financial decision of banks with high mean score of 4.238 (row *h* of Table 6.7). Similarly, the large proportion of the respondents posited their issuance of common stocks to finance growth (row *h* of Table 6.8). Thus, these survey results also substantiate the evidences reported in the static panel model estimations regarding the effect of profitability and growth on the capital structure decision of banks.

The Chief Financial Officers (CFOs) were also asked four questions that primarily focus on the effect of risk on capital structure decision of banks (rows *d* and *e* of Table 6.7; rows *c* and *d* of Table 6.8). The survey result disclosed that majority (70 percent) of the respondents confirmed that the volatility of earnings and cash flows are important or very important factor to be considered in financial decision of banks with mean scores of 3.819 (row *d* of Table 6.7). Similarly, high proportions of the survey responses indicated the importance or very importance of risk and costs of financial distress in financial decision of banks with mean scores of 3.857 (Row *e* of Table 6.7). However, these cross sectional survey results contradicted the found out evidence that states the insignificant effect of earning volatility on the capital structure decision of banks in the static panel model estimation. But majority of the survey respondents disagreed or were neutral to the

common stock issuance to complement risk management (row *c* of Table 6.8). However, few of the survey respondents agreed with the issuance of stocks to build up the cushion against the unexpected losses (row *d* of Table 6.8).

The last five questions also primarily focus to find out CFO's perception on the effect of regulatory pressure on the capital structure decision of banks (rows *i, j* and *k* of Table 6.7; rows *i* and *j* of Table 6.8). As a result, high percentages of the respondents underscored the importance of meeting the minimum regulatory capital requirement on capital structure decision of banks with a mean rating of 4.191 (row *i* of Table 6.7). Similarly, majority of the respondents regarded changes in regulatory and supervision framework as the important factors in financial decision of banks (row *k* of Table 6.7). These survey results are also consistent with CFOs' higher tendency to assess the additional capital to be held by the bank given the regulatory capital requirement (row *i* of Table 6.8). High percentages of the survey respondents also disclosed that they assess the capital needed to run their business and verify whether it meets the regulatory capital requirement (row *j* of Table 6.8). Hence, these survey results are also found to be consistent with the evidences documented in static panel model estimation.

However, in analyzing the survey results on the determinants conditional on the bank size, liquidity and ownership, the results showed no significant differences in mean scores using the Mann-Whitney test (Table 6.7 & Table 6.8).

6.2.2.2. Survey Results on Target Setting Behavior and Adjustment Dynamics

This subsection presents the responses given to the different question items which are expected to address possible target capital structure setting behavior as well as possible capital structure adjustment dynamics as depicted in Panel A and Panel B of Table 6.9 below. This cross sectional survey constitutes different items measured on the nominal scale and the order scale. Hence, depending on the type of the measurement scale, either percentage of responses or mean scores have been computed for each categorical responses. Besides, in analyzing these survey responses conditional on bank size, liquidity and ownership, the study has used either likelihood ratio test or Mann-Whitney test, as appropriate.

These survey results are also linked to the formulated third, fourth and fifth sub-questions/specific objectives/hypotheses of the study. These cross-sectional survey results are also used to substantiate the empirical results documented in dynamic panel model estimations.

Table 6.9. Responses to Target Capital Structure Setting Behavior and Adjustment Dynamics

	Panel A											
	Item	Response Categories	%	Size			Liquidity			Ownership		
				Small	Large	$L\chi^2$	Low	High	$L\chi^2$	Pub	Priv	$L\chi^2$
a	In raising new funds to finance investments, your bank seeks to maintain a target capital structure.	*Yes*	65	72.7	50.0	1.156 (0.282)	33.3	73.3	2.875 (0.090)	100	60	0.082 (0.775)
		No	35	27.3	50.0		66.7	26.7		0	40	
b	In raising new funds to finance inv'ts,your bank follows a hierarchy.	*Yes*	75	40	57.1	0.011 (0.916)	33.3	55.6	0.032 (0.859)	50	50	1.032 (0.310)
		No	25	60	42.9		66.67	44.4		50	50	
c	Indicate the extent to which your bank seeks to maintain the target debt to equity ratio.	*Very Strict Target*	25	36.4	20.0	5.296 (0.151)	0	40.0	7.812 (0.050)	0	33.3	3.590 (0.309)
		Somewhat Tight Target/Range	15	18.2	20.0		50	16.7		50	13.3	
		Flexible Target	40	45.5	30.0		33.3	30.0		50	33.3	
		No Target Ratio or Range	20	0	30.0		16.7	13.3		0	20	
d	Indicate how your bank target capital ratio differs from actual capital ratio.	*Actual capital ratio usually exceeds target capital ratio*	15	27.3	10.0	2.189 (0.534)	33.3	0	1.163 (0.762)	50	0	3.430 (0.330)
		Target capital ratio usually exceeds actual capital ratio	25	36.4	30.0		0	11.1		0	10	
		Target capital ratio is usually very close to actual capita ratio	30	27.3	30.0		0	22.2		0	20	
		Actual capital ratio may exceed or fall below target cap ratio	30	9.1	30.0		66.7	66.7		50	70	
e	Suppose your bank's actual capital deviates from desired capital due to non-transitory reasons.	*Adjust quicker if Overcapitalized than the opposite*	35	63.6	10.0	7.956 (0.034)	33.3	40	3.765 (0.229)	50	28.6	3.085 (0.362)
		Adjust quicker if Undercapitalized than the opposite	50	18.2	70.0		66.7	33.3		50	42.9	
		Pace of adjustments in both cases will be the same	15	18.2	20.0		0	26.7		0	28.6	
	Panel B											
	Item		Mean	Size			Liquidity			Ownership		
				Small	Large	*U*	Low	High	*U*	Pub	Priv	*U*
a	Indicate the extent to which your bank's actual capital ratio adjusts towards the target capital ratio in the deviations due to non-transitory factors.	*A) If actual capital is above target capital, we will reduce the actual capital as quickly as possible*	2.55	2.818	2.400	35.00 (0.123)	2.667	2.600	29.50 (.244)	3.000	2.467	30.50 (.184)
		B)If actual capital is below target capital, we will increase the actual capital as quickly as possible	3.80	3.273	3.800	35.50 (0.001)	3.833	3.400	27.00 (.158)	3.333	3.600	37.50 (.365)

Note 1- *Mean scores computed only for ranked responses and calculated by assigning scores of 5 through 1 for rankings (from 5-very likely, 4-likely, 3-neutral, 2-unlikely 1- very unlikely, respectively) and by assigning scores of 3 through 1 for rankings (from 3-1st rank,2-2nd rank, 1- 3rd rank, respectively), and by multiplying each score by the fraction of responses within each rank*

The survey results shown in Table 6.9 reveal target capital structure setting behavior and capital structure adjustment dynamics.

A) Survey Results on Target Capital Structure Setting Behavior

Firstly, to investigate the target capital structure setting behavior of banks, the respondents were asked if target setting tendency exists and about the extent to which they seek to maintain target capital structure (rows *a* and *c* of Panel A in Table 6.9). As shown in Table 6.9, majority (65%) of the respondents indicated the existence of target capital structure setting behavior towards raising new funds for financing. With regard to the extent to which banks seek to maintain target debt to equity ratio, only few (20%) of the respondents replied the absence of target debt equity ratio or range, while greater number (40%) claimed the presence of flexible target debt to equity ratio. The remaining 40% of the respondents said that they had somewhat tight target or very strict target debt to equity ratio (Graham & Harvey, 2001). This survey result provides evidence to the prediction of tradeoff theoretical model. This implies that banking firms tend to balance benefits of leveraging in the form of tax shield and reduce agency problems on free cash flows with the costs of leveraging from the possible costs of distress, agency costs of debt and regulatory costs. These results corroborate the finding on the symmetrical dynamic panel model estimations regarding the mean reverting behavior of banks towards their capital structure decision.

As shown in Table 6.9, the target capital structure setting behavior of banks is also analyzed in terms of bank characteristics, i.e., their size, liquidity and ownership. Hence, the survey responses and the likelihood test results revealed that target capital structure setting tendency is found to be higher in relatively highly liquid bank than in relatively weakly liquid banks. That is, high

percentage of the respondents (73.3%) of relatively higher liquid banks indicated their stronger tendency to seek to maintain target capital structure than the respondents (33.3%) of relatively lower liquid banks ($L\chi^2$ (1) =2.875, p = 0.090). Similarly, the percentage of respondents (56.7%) of relatively higher liquid banks indicated their tendency to seek at least to the extent of somewhat tight target or very strict target which is higher than the relatively lower liquid banks(50%)($L\chi^2$ (3) = 7.812, p =0.050).

However, target setting behavior is found to be insignificantly associated with bank size and ownership. That is, despite high percentage(72.7%) of respondents of smaller banks tend to seek to maintain target capital structure in raising new funds when compared to larger banks(50%), size of banks is found to be insignificant in likelihood ratio test($L\chi^2$ (1) =1.156, p = 0.282). Similarly, high percentage (54.6%) of respondents of smaller banks replied their tendency to seek to the extent of somewhat tight target or very strict target debt to equity ratio when compared to the tendency of larger banks (40%). But, size of banks is found to be insignificantly associated with such target setting tendency of banks in likelihood ratio test ($L\chi^2$ (3) =5.296, p =0.151).

Likewise, despite high proportion of respondents (50%) of public banks replied their tendency to seek to the extent of somewhat tight target or very strict target capital structure compared to private banks (46.6%), target capital structure setting behavior is found to be independent of ownership of banks, in likelihood ratio test ($L\chi^2$ (1) = 0.082, p =0.775 and $L\chi^2$ (3) =3.590, p = 0.309).

B) Survey Result on Capital Structure Adjustment Dynamics

The survey result reported in Table 6.9 reveals the results on capital structure adjustment dynamics. To investigate the possible asymmetrical capital structure adjustment dynamics, the respondents were asked firstly about their relative deviation from target equity capital ratio (row *d* of Panel A in Table 6.9). Then, the respondents were also probed about the rate or the extent to which banks tend to adjust towards the target, given the relative deviation from their target (Row *e* of Panel A; row *a* of Panel B in Table 6.9). Hence, as per the responses given to the relative deviation of the actual capital ratio from target equity capital ratio, only 30% of the respondents replied that target capital ratio is usually very close to actual capital ratio. Despite some variations of the responses as to how it deviates (it may only exceeds, only fallen or may exceed/fall), the remaining 70% of the respondents said that target equity capital ratio deviates from actual capital ratio. This implies that a given bank is not always at the desired or target capital structure. It could be either over-capitalized (underleveraged) or under-capitalized (overleveraged) at a given point in time. Besides, in response to the rate of adjustment given the deviation, 50 % percent of the respondents revealed that the speed of adjustment towards the target in under-capitalized (over-leveraged) banks is faster than the speed of adjustment in over-capitalized(under-leveraged) banks(35%)(row *e* of Panel A in Table 6.9). Similarly, the mean scores reveal the faster rate of adjustment of under-capitalized banks (3.80) than over-capitalized banks (2.55) (row *a* of Panel B in Table 6.9). These results substantiate the finding documented in the asymmetrical dynamic panel model estimations depicted in Table 6.5.

As indicated in Table 6.9, the survey results on capital structure adjustment dynamics were also examined against bank characteristics. That is, to examine the possible heterogeneity on capital structure adjustment dynamics, the responses about the dynamics of target capital structure adjustment of banks are cross-tabulated along with bank size, liquidity and ownership (Table 6.9). Hence, based on the survey responses and the likelihood ratio test results, the tendency of overleveraged (under-capitalized) banks to adjust faster is found to be higher for larger banks (70%) than their smaller counterparts (18.2%) ($L\chi^2$ (2) = 7.956, p = 0.034). Besides, the mean scores of the responses and the Mann-Whitney test results of bank size also revealed that the tendency of banks to adjust towards target capital structure is found to be associated with bank size (U=35.00, z =-1.151, ns ,U= 35.50, z =-3.48, p <.001)(row *a* of Panel B in Table 6.9).

However, in the documented likelihood ratio test (row *e* of Panel A in Table 6.9) and Mann-Whitney test results (row *a* of Panel B in Table 6.9), bank liquidity is found to be insignificantly associated with the speed of adjustment of banks in reverting towards their target capital structure ($L\chi^2$ (2) =3.765, p = 0.229; U = 29.50, z = -0.730, ns, U = 27, z = -0.957, p <0.158). These results substantiate the finding documented in estimations of the heterogeneous target capital structure adjustment dynamic panel model. Similarly, both the likelihood ratio test and Mann-Whitney test results revealed that the ownership of banks is insignificantly associated with the asymmetrical speed of adjustment of banks towards their target capital structure ($L\chi^2$ (2) =3.085, p = 0.362 ; U = 30.50, *z = -0.730*, ns ,U = 37.50, *z = -0.957*,ns) (row *e* of Panel A; row *a* of Panel B in Table 6.9).

6.2.3. Summary of the Results

The study investigates the determinants and the dynamics of capital structure based on estimation of static and dynamic panel data models, and cross-sectional survey. In static panel model fixed effect estimation, effective tax rate, profitability, growth, dummy for minimum capital regulation and dummy for regulatory pressure for capital adequacy are found to be significantly related to leverage of banks. The effects of collateral values of assets, size and earnings volatility, however, are statistically insignificant. In estimation of symmetrical capital structure adjustment model, the study also documents the existence of capital structure dynamism. In other words, banks tend to adjust towards the target at a relatively rapid speed of adjustment. Besides, in estimation of asymmetrical capital structure adjustment model equation, the target capital structure adjustment dynamics of overleveraged (under-capitalized) banks and underleveraged (over-capitalized) banks is found to be asymmetrical. Further, in the estimation of the dynamic panel model that allows the possible heterogeneity of the speed of adjustment, the result revealed that banks' speed of adjustment depends on their absolute deviations from target, size, regulatory pressure for capital adequacy and ownership.

The cross-sectional survey carried out on the determinants of capital structure revealed that the tax shield of interest deductibility, size of free cash flows and/or profitability, investment policy/growth opportunities and regulatory pressure for capital adequacy are important (and/or very important) factors in the capital structure decisions of banks. The survey results also showed the presence of the target capital setting behavior and asymmetrical rate of adjustment of banks.

6.3. Discussions

The study investigated the central research question: *What determines the capital structure decision of banks and how do they adjust capital structure dynamically in Ethiopia*? Hence, this section presents the discussions made, in line with theoretical predictions and empirical literatures on the documented results of the estimations of panel models and the cross-sectional survey.

6.3.1. Discussions of the Results on the Determinants of Capital Structure

The study investigated the determinants of capital structure based on the estimated results of static panel model (Table 6.3) and symmetrical dynamic panel model (Table 6.4) and the cross-sectional survey results (Table 6.7 and Table 6.8).

6.3.1.1. Taxation

In the chosen fixed effect estimator, effective tax rate is found to be positive in sign and statistically significant at 5% in regressing against bank leverage in a static framework (Table 6.3). Similarly, in a dynamic perspective, effective tax rate is found to be positive and statistically significant at 1% level both in Difference GMM and in System GMM estimators (Table 6.4). In the cross-sectional survey, the tax advantage of interest deductibility and the level of interest rate on the deposits and other debts of banks are also found to be important and/or very important factors in the capital structure decision of banks in Ethiopia (Table 6.7)[40].

[40] Besides, the survey result provides moderate support for the importance of tax loss carried forward in capital structure decision of banks (Table 6.8).

When comparing the results of this study with the findings of past empirical studies on banking firms (such as Marcus (1983) on US banks, Hortuland (2005) on Swedish banks and Amidu (2007) on Ghanaian banks), the results are found to be consistent with each other. The finding is also consistent with the evidence Abor (2008) found out by examining Ghanaian non-financial firms. Besides, the survey result is also consistent with the available past survey studies conducted on banking firms. For example, the survey studies carried out by Marques & Santos (2003) and by Iwarere & Akinley (2010) on Portuguese and on Nigerian banks, respectively, found tax economies of debt rather than equity financing as one of the internal factors to be heeded in capital structure decision of banks (Marques & Santos,2003). Similarly, the survey result of this study is consistent with the results documented by various survey studies on corporate financial decision of non-financial firms in US (Graham & Harvey, 2001), in UK (Beattie *et al.*, 2006; Brounen *et al.*, 2006 ; Archbold & Lazirdis, 2010) and in selected European countries (Bancel & Mitto, 2004).

However, the results documented on taxation contradicted the evidences of some of the past empirical studies (for example, Sharp (1995) on Australian Trading banks, Booth *et al.* (2001) on non-financial firms of selected developing countries and Chen & Strang (2006) Huang & Song (2006) on Chinese non-financial firms).

Hence, these results provide empirical support for the predictions of tax benefits and costs of financial distress tradeoff model. The increased use of debt financing of Ethiopian banks mainly in the form of deposits lowers the effective marginal tax rate more by interest deductions than by equity financing (Abor, 2008).

6.3.1.2. Profitability and/or Size of Free cash flows

Profitability of banks is found to be statistically significant at 1% and negatively related to leverage using the chosen static panel model fixed effect estimator (Table 6.3). Similarly, profitability of banks is also found to be negative and statistically significant at 5% and 1% level in the Difference GMM and System GMM estimations respectively (Table 6.4). The survey results also substantiate the empirical results of panel model estimations. Specifically, the cross-sectional survey result disclosed that profitability/financial flexibility and size of free cash flows as the important or very important factor to be considered in capital structure decision of banks in Ethiopia (Table 6.7). Given the importance of profitability, the survey result also revealed the lesser tendency of banks for debt issuance in the presence of accumulated profit (Table 6.8). Moreover, the survey results show the preference of banks for debt issuance in the absence of sufficient profit and at last, stock issuance in the absence of other funding sources (Table 6.8).

In comparison to past studies, these findings are found to be consistent with the evidences documented in banking firms. For example, similar result is reported in US and European banks (Gropp & Heider, 2009), in banks of selected developing countries (Octavia & Brown, 2008), in Ghanian banks (Amidu, 2007), in Turkish banks (Çağlayan & Sak ,2010), in banks of selected industrialized countries (Brewer *et al.*, 2008), in European banks (Schaeuck & Cihak, 2007), in Portuguese banks (Boucihina & Robeiro, 2007), and in Australian trading banks (Sharp, 1995), among others. In general, these studies documented the negative relationship between profitability and leverage, or equivalently, positively with capital ratio of banks. Similarly, the survey results are also consistent with the results in survey studies of Portuguese banks (Marques & Santos, 2003) and Nigerian banks (Iwarere & Akinley, 2010). These survey studies reveal the size of cash flows

and profitability as the main internal determinants in the capital structure decision of banks (Marques & Santos, 2003). Similarly, the result is also consistent with the results documented in the studies of nonfinancial firms---for example, in US (Fried & Lang, 1988; Titman & Wessels, 1988; Frank & Goyal, 2004); in G-7 countries (Rajan & Zingales, 1995); in UK (Bevan & Danbolt, 2004); in Japan (Hirota,1999); in selected developing countries (Booth *et al.*, 2001); in China (Chen, 2004; Huang & Song, 2005); in Uruguay (Ignacio, 2002); and in Ghana (Abor, 2008), among others. Similarly, the survey result is also consistent with the evidences of survey studies in nonfinancial firms—for example, in US (Graham & Harvey, 2001); in UK (Beattie *et al.*, 2006; Brounen *et al.*, 2006); and in selected European countries (Bancel & Mitto, 2004), among others—also documented the importance of financial flexibility or profitability in the capital structure decision of banking firms.

At the outset, the documented findings provide empirical support to the prediction of the pecking order theoretical model. On the contrary, these results reject the prediction of the tradeoff theoretical model[41]. In the pecking order theoretical model perspective, these results imply that profitable banks prefer internal financing to external financing in order to minimize information asymmetry related costs (Majluf & Myers, 1984; Myers, 1984; Harris & Raviv, 1991). Alternatively, the documented evidences on profitability can be explained based on the legal reserve requirement of Ethiopian banks (Directive No.SBB /4/ 95 of NBE). In the legal reserve requirement, banks in Ethiopia are required to transfer 25% of their profitability to capital reserves (Directive No.SBB /4/ 95 of NBE).

[41] In tradeoff, the result implies, the use of deposits and other debts in curbing the self-interest of managers over the high free cash flows, expected to be hold in highly profitable banks, is minimal (Jenson, 1986).

6.3.1.3. Growth Opportunities and/or Investment Policy

In the fixed effect static panel model estimation, the documented negative coefficient of growth opportunities of banks is found to be statistically significant at 5% level to be related with leverage of banks in Ethiopia (Table 6.3). However, the coefficient of growth opportunities is found to be statistically insignificant in both the Difference GMM and the System GM estimations of the short-run dynamics (Table 6.4)[42]. On the other hand, the cross-sectional survey results substantiate the static panel model estimation results. Clearly, the survey responses indicate the importance or very importance of the investment policy or growth opportunity of banks in their financing decisions (Table6.7). Specifically, the respondents regarded growth opportunities as the firstly ranked factor in their capital structure decisions (Table 6.7). Moreover, the survey results demonstrate the banks's issuance of common stocks to finance growth opportunities (Table 6.8). In comparison to past evidences reported in banking firms, these results are found to be inconsistent with the documented evidences, for example, in Ghanaian banks (Amidu, 2007), in Turkish banks (Çağlayan & Sak, 2010), in US banks (Berger *et al.*, 2008), and in Australian trading banks (Sharp, 1995). These studies reported a positive relationship between growth opportunities and leverage of banks or alternatively, a negative relationship between growth and capital ratio of banks. Similarly, the documented results are also inconsistent with the findings of past studies in nonfinancial firms (for example, Kester, 1986; Titman & Vessels,1988; Jordan *et al.*, 1999; Cassar & Holmes, 2003; Chen, 2004; Huang & Song, 2005; Chen & Strange, 2006; Abor, 2008). However, the findings of

[42] The dynamic panel model estimations reveal the short-run relationship between factors and leverage (Antoniou *et al.*, 2008). Hence, it may differ from the static panel model, which may capture the long-term relationship (Antoniou *et al.*, 2008). Appropriately, the long-run relation can also be examined by estimating the short-run coefficients in dynamic estimations and dividing by the speed of adjustment (Flannery & Hankins, 2007; Antoniou *et al.*, 2008).

the study are also consistent with the reported evidences of other empirical studies. For instance, similar results are reported in the studies of nonfinancial firms in US (Kim & Sorensen, 1986; Barton & Gordon, 1988; Frank & Goyal, 2004), in G-7 countries (Rajan & Zingles, 1995), in Japan (Hirota, 1999), in selected developing countries (Booth *et al.*, 2001), in Saudi Arabia (Al-Sakran, 2001), in Pakistan (Shah & Khan, 2007) and in Libya (Buferna *et al.*, 2005), among others[43]. Further, the survey results are consistent with the reported evidences in the past survey studies conducted in Portuguese banks (Marques & Santos, 2003), in UK banks (Alfon *et al.*, 2004) and in Hong Kong banks (Wong *et al.*, 2005).

Hence, the documented results of the study provide empirical support to the predictions of the tradeoff theoretical model. In contrast, the findings reject the predictions of the pecking order theoretical model. Specifically, from the perspective of the tradeoff theoretical model, the findings support the prediction that high-growth opportunities of firms entail high probability of default (Frank & Goyal, 2009) and high agency costs of debt, in the form of assets substitution (Jenson & Meckling, 1976) and underinvestment (Myers, 1977). In part, these explanations may be relevant to the context of Ethiopian banks. However, the alternative explanation of the findings may be related to the absence of a well-developed debt market of Ethiopia. Besides, highly growing banks are expected to be young, and hence very much stretched in their internal financial resources to fund investment opportunities (Chen, 2004; Dang *et al.*, 2012). Thus, in the presence of very much underdeveloped debt market (Chen, 2004) and limited internal funds (Dang *et al.*, 2012),

[43] As caveat for comparisons, past studies mainly use the market–to-book value ratio as the proxy for growth opportunities. But, still, some of past studies used a similar proxy of change of total assets for growth opportunities.

stock issuances become somewhat an "easy way" to finance the growth opportunities of Ethiopian banks.

6.3.1.4. Collateral Values of Assets

In the static panel data model estimators, the coefficients of collateral values of assets are found to be negative but statistically insignificant in regressing against leverage of banks in Ethiopia (Table 6.3). Consistent with the results in the static panel model estimation, the coefficient of collateral values of assets is also found to be statistically insignificant in the dynamic panel model estimations (Table 6.4). In comparison to past studies conducted in banking firms, this evidence is inconsistent with the results documented, for example, in US and European banks (Gropp & Heider, 2009); in banks of selected developing countries (Octavia & Brown, 2008 ; in Taiwan banks (Kuo, 2000); in Turkish banks (Çağlayan & Sak, 2010); and in Ghanaian banks (Amidu, 2007). Similarly, this finding is also inconsistent with the evidences documented in the nonfinancial firms of developed countries (Fried & Lang, 1988; Rajan & Zinglas, 1995; Jordan *et al.*, 1998; Hirota, 1999; Bevan & Danbolt, 2004; Frank & Goyal, 2004) and developing countries (Booth *et al.*, 2001; Ignacio, 2002; Chen, 2004; Buferna *et al.*, 2005; Shah & Khan, 2007;Abor, 2008; Ramlall, 2009).

In effect, the finding provides empirical support neither for the predictions of the tradeoff theoretical model nor for the predictions of the pecking order theoretical model. In the tradeoff theory, the result implies that, even if banks are not required to pledge collaterals to raise debt in the form of deposit, the collateral values of asset holding of Ethiopian banks have no significant effect on raising funds from other debt financing sources. However, due to the very nature of the operations of banking firms, this result can be attributed to the low fixed asset holding of banks.

Besides, in the existing thin long-term debt market of Ethiopia, there may be a high reliance of Ethiopian banks on the use of deposits and other short-term debts (Booth *et al.*, 2001).

6.3.1.5. Size

In the static panel model estimation, the positive coefficient of size of banks is found to be statistically insignificant in regressing against leverage of banks in Ethiopia in the chosen fixed effect estimator (Table 6.3). Similarly, in the System GMM estimator, the negative coefficient of size is found to be statistically insignificant in regressing against leverage of banks in the dynamic perspective (Table 6.4).

In comparison to past empirical studies conducted in banking firms, this result is inconsistent with the reported results of studies in US and European banks (Gropp & Heider, 2009); in Taiwan banks (Kuo, 2000); in Ghanaian banks (Amidu, 2007); in Turkish banks (Çağlayan & Sak, 2010); in European banks (Schaeuck & Cihak, 2007); in Honk Kong banks (Wong *et al.*, 2005); in US banks (Berger *et al.*, 2008); in banks of selected industrialized countries (Brewer *et al.*, 2008), among others. Similarly, the finding is also inconsistent with the evidences documented in the studies of nonfinancial firms, for example, in US (Fried & Lang, 1988; Frank & Goyal, 2004); in G-7 countries (Rajan & Zingales, 1995); in UK (Jordan *et al.*, 1998; Bevan & Danbolt, 2002; 2004); in Japan (Hirota, 1999); in selected developing countries (Booth *et al.*, 2001); in Pakistan (Shah & Khan, 2007;) and in Ghana (Abor,2009).

Therefore, this result does not support both the predictions of the tradeoff and the pecking order theoretical models. The result implies that, even if larger banks are expected to be more diversified, less exposed to defaults, face low agency cost of debt and low costs of information asymmetry than their smaller counterparts (Titman & Wessels, 1988; Rajan & Zinglas, 1995), size doesn't matter in the financing decision of Ethiopian banks.

6.3.1.6. Risk

The coefficient of earnings volatility is found to be statistically insignificant in regressing against leverage of banks in the chosen fixed effect static panel model estimator (Table 6.3). Consistently, earnings volatility is found to be statistically insignificant in the Difference GMM and the System GMM estimators (Table 6.4). However, the cross-sectional survey result revealed the importance and/or very importance of volatility of earnings and cash flows in the financing decision of banks (Table 6.7). Similarly, the survey responses also rated risk and costs of distress and insolvency as important factors in the capital structure decision of banks (Table 6.7).

Compared to past studies in banking firms, the documented evidence in the panel model estimations is found to be inconsistent with the findings in US banks (Marcus, 1983; Berger *et al.*, 2008); in Portuguese banks (Boucihina, 2008); and in Taiwan banks (Kuo, 2000), among others. Similarly, this finding is inconsistent with prior evidences reported in nonfinancial firms of selected developing countries (Booth *et al.*, 2001), as well as in China (Chen & Strange, 2006) and in Ghana (Abor, 2008). However, the survey result of the study is consistent with the findings in the survey studies of the UK banks (Alfon *et al.*, 2004) and the Hong Kong banks (Wong *et al.*, 2005).

Likewise, the survey result is also consistent with the documented evidences in the survey studies of nonfinancial firms in US (Graham & Harvey, 2001), in Europe (Bancel & Mittoo, 2004; Brounen *et al.*, 2006), and in UK (Beattie *et al.*, 2006), among others.

As a result, despite its inconsistencies to panel model estimations[44], the documented survey results provide support to the predictions of the tradeoff and the pecking order theoretical models. In the tradeoff theoretical model, the survey results support the view that risk, costs of distress and high volatility of earnings imply the expected high probability of default and agency cost of debt (Myers, 1984; Titman & Wessels, 1988; Abor, 2008). In the pecking order theoretical model, the survey results support the prediction that the high variability of earnings of firms leads to the difficulties of investors to forecast future earnings of firms using available information (Prasad *et al.*, 2001). Then, investors may demand a higher premium for risk forbearance, which in turn raises the costs of debt in external financing (Prasad *et al.*, 2001; Shah & Khan, 2007). Hence, in both predictions, banks are expected to decrease debt financing or increase equity capital ratio. But, still, a high percentage of the respondents disregard the banks' issuance of shares to complement risk and to provide cushion against unexpected losses (Alfon *et al.*, 2004; Wong *et al.*, 2005) (Table 6.8). In effect, the direction (positive/negative) of the importance of risk for the financing decision of Ethiopian banks cannot be clearly discerned in the survey results.

[44] Even if empirically defended, the contradiction may be attributed to the proxy of earnings volatility used in panel model estimations. Due to the lack of quarterly data and recent history of the private banking sector in Ethiopia, it has been measured using the standard deviation of ROA of each bank on three consecutive periods. Hence, it may not capture much of the variations in earnings.

6.3.1.7. Regulatory Pressure

In the chosen fixed effect estimation, the coefficient of the dummy variable for the minimum paid up capital requirement is found to be negative and statistically significant at 1% in regressing against leverage of banks in Ethiopia (Table 6.3). Consistently, the coefficient of the dummy variable for the minimum paid up capital regulation is also found to be negative and statistically significant at 5% level in the Difference GMM estimation (Table 6.4). Moreover, the positive coefficient of the dummy variable for regulatory pressure for capital adequacy is found to be statistically significant at 1% level in the fixed effect (Table 6.3) and the Difference GMM estimations (Table 6.4). In the cross-sectional survey, the regulatory pressure factors are also found to be important and very important factors to be considered in the capital structure decision of banks in Ethiopia (Table 6.7 & Table 6.8). Specifically, the survey results revealed the importance or very importance of the consequences of contravening the regulatory minimum capital requirement and changes in the regulatory and supervision frameworks in the financing decision of banks (Alfon *et al.*, 2004; Wong *et al.*, 2005) (Table 6.7).

The findings of the study are consistent compared to the reported evidences of past studies[45], for example, in US banks (Jacques & Nigro, 1998; Osterberg & Thomson, 1996), in Malaysian banks (Ahmed *et al.*, 2009), in Norwegian banks (Lindquest, 2004) and in Australian trading banks (Sharp, 1995), among others. The survey results are also found to be consistent with the evidence documented in Portuguese banks (Marques & Santos, 2003), in UK banks (Alfon *et al.*, 2004) and

[45] In these comparisons, the possible significant differences in the institutional and regulatory frameworks of past studies need to be considered.

in banks of Honk Kong (Wong *et al.*, 2005). However, the findings are inconsistent with the reported results in other studies of US banks (Marcus, 1983; Berger *et al.*, 2008; Flannery & Rangan, 2008); US and European banks (Gropp & Heider, 2009) and Swedish banks (Hortuland, 2005), among others.

Thus, the documented results of the study generally reveal the relevance of regulatory factors to explain the capital structure decision of Ethiopian banks. Expressly, the minimum paid up capital regulation dummy variable is expected to capture the effect of the minimum paid up capital requirement imposed on the Ethiopian banks established during the years prior to and following 1999. Hence, the document result confirms the minimum paid capital regulation as one of the pertinent regulatory factors to explain the capital structure decision of Ethiopian banks. To adhere to the required minimum paid up capital amount, Ethiopian banks tend to increase equity capital financing and be constrained in their choice of leverage (Flannery & Rangan, 2008). Besides, the finding on the regulatory pressure for capital adequacy supports the view that, even if low-capitalized Ethiopian banks hold capital ratio below the banking industry average, their capital ratio is above the regulatory minimum (Ahmed *et al.*, 2009). Thus, they tend to increase leverage or decrease equity capital ratio (Ahmed *et al.*, 2009). This tendency of Ethiopian banks to hold capital ratio in excess of the regulatory minimum has also been revealed in the survey results. Specifically, a high percentage of survey respondents replied that banks firstly assess the capital required to run their operation, and then confirm whether it meets the regulatory required capital minimum (Wong *et al.,* 2005) (Table 6.8). On the other hand, the survey results also disclosed the tendency of banks to assess the additional capital needed for their operation, given the regulatory minimum (Wong *et al.,* 2005) (Table 6.8). In both survey responses, Ethiopian banks consider the

regulatory capital minimum in their capital structure decision (Wong *et al.*, 2005). But, still, they tend to hold in excess of the regulatory minimum (Alfon *et al.*, 2004; Wong *et al.*, 2005). In contrast, the documented result on the regulatory pressure for capital adequacy in the panel model estimation rejects the prediction for the presence of higher regulatory pressures in low-capitalized bank to raise their capital ratio than in highly capitalized banks (Marcus, 1983; Berger *et al.*, 2008; Ahmed *et al.*, 2009).

6.3.2. Discussions: Evidences on Target Capital Structure Adjustment Dynamics

To investigate the capital structure adjustment dynamics, the study examined the estimation results in dynamic panel models of symmetrical capital structure adjustment (Table 6.4), asymmetrical capital structure adjustment (Table 6.5), and the capital structure adjustment dynamics with heterogeneous rate of adjustments (Table 6.6). Besides, the study also analyzed the cross-sectional survey results with respect to target setting behavior and adjustment dynamics (Table 6.9).

6.3.2.1. Symmetrical Target Capital Structure Adjustment and Target Setting Behavior

In the symmetrical capital structure adjustment dynamic panel model, the coefficient of lagged leverage is found to be positive and statistically significant consistently in the Difference GMM and the System GMM estimations (Table 6.4). In these Difference and System GMM estimations, the partial speed of adjustment towards the desired leverage of Ethiopian banks is found to be 41.6% and 37.3% per year, respectively (Table 6.4). Considering both estimations, the average symmetrical partial rate of adjustment would be 39.45 % per annum (Drobetz *et al.*, 2013). This result implies that, on average, Ethiopian banks can close just about 39.45% of the deviation from

their desired leverage (Dang *et al.*, 2012). In terms of hal- life, the documented rate of adjustment matches the half-life of around 1.38 years (Dang *et al.*, 2012; Drobetz *et al.*, 2013)[46]. The survey results also confirm the presence of the target capital structure setting tendency of banks (Table 6.9). To be specific, the survey respondents replied about the presence of high tendency of banks to seek to maintain target capital structure in raising funds to finance new investment (Table 6.9). Besides, the survey results also disclosed that banks that tend to seek target capital structure also usually deviate from the target in a given period (Table 6.9).

In comparison to past studies, the estimated speed of adjustment is closer to the reported speed of adjustment of 46% in EU and US banks (Gropp & Heider, 2009) and 44.3% in nonfinancial firms of UK (Ozkan, 2001).However, the estimated rate of adjustment is faster than the estimated speeds of 14% in Australian trading banks (Sharp, 1995), 20% to 23% in US banks (Marcus, 1983), 12% in banks of industrialized countries (Brewer *et al.*, 2008), and 17% to 35% in nonfinancial firms in US (Flannery & Rangan, 2006; Lemmon *et al.*, 2008; Huang & Ritter, 2009), among others. In contrast, the estimated rate is slower than the reported estimated speed of 71.9% in nonfinancial firms of Spain (De Miguel & Pindado, 2001). The survey result is also consistent with the evidences reported by survey studies conducted in UK banks (Alfon *et al.*, 2004); in Hong Kong banks (Wong *et al.*, 2005); in US nonfinancial firms (Graham & Harvey, 2000); and in UK nonfinancial firms (Beattie *et al.*, 2006).

Hence, the documented results provide empirical support to the predictions of the target capital structure adjustment theory (Fischer *et al.*, 1991). The finding confirms the presence of dynamism

[46] The period for a half-life is computed as: ln(1/2)/ln(1-speed of adjustment) (Dang et al, 2012; Drobetz *et al.*, 2013).

in the capital structure decision of Ethiopian banks (Antoniou *et al.*, 2008). Specifically, Ethiopian banks tend to adjust towards their target capital structure through time (Myers, 1984). In the theoretical predictions, the speed of adjustment depends on the cost of adjustment and costs of deviation from target (or the benefits of target adjustment) (Flannery & Hankins, 2007). Thus, the documented speed of adjustment implies the presence of somewhat higher deterrent adjustment costs than the benefits of target adjustments (or the costs of deviation from the target) (Flannery & Hankins, 2007).

6.3.2.2. Asymmetrical Target Capital Structure Adjustment

In estimating the asymmetrical capital structure adjustment model, the coefficients of overleveraged banks and underleveraged banks are found to be positive and statistically significant at 5% level and 1% level, respectively, in the chosen fixed effect estimation (Table 6.5). But, still, the coefficient of underleveraged banks is lower than the estimated coefficient of overleveraged banks (Table 6.5). This evidence implies the presence of asymmetrical target capital structure adjustment (Byoun, 2008). Relatively, there is a rapid pace of adjustment in overleveraged (undercapitalized) banks than in underleveraged (overcapitalized) banks (Berger *et al.*, 2008; Byoun, 2008). These estimation results suggest that overleveraged banks need around 0.88 years to adjust half of the deviation from the desired leverage. On the other hand, underleveraged banks need about 0.96 years to close half of the deviation (Dang *et al.*, 2012). The cross-sectional survey results also corroborate the findings on the asymmetrical dynamic panel model estimations (Table 6.9). A high percentage of respondents replied about the presence of a rapid pace of adjustment when their actual equity capital ratio is below the desired equity capital ratio (undercapitalized)

rather than overcapitalized (that is, when the actual equity capital ratio exceeds the target equity capital ratio) (Wong *et al.*, 2005).

As compared to past studies, the finding is consistent with the results documented in US banks (Berger *et al.*, 2008). Likewise, this evidence is also consistent to the reported results of nonfinancial firms in US (Byoun, 2008; Faulkender *et al.*, 2012); in G-7 countries (Drobetz *et al.*, 2013); and in selected Central and Eastern European countries (De Haas & Peeters, 2004). The survey result is also consistent with the documented evidences in UK banks (Alfon *et al.*, 2004) and in Hong Kong banks (Wong *et al.*, 2005).

The estimated result confirms the presence of asymmetrical capital structure adjustment. To be specific, overleveraged banks adjust faster than underleveraged banks (Byoun, 2008). As pointed out earlier, the speed of adjustment depends on the cost of adjustment and costs of deviation from target (Flannery & Hankins, 2007; Drobetz *et al.*, 2013). Hence, the documented results imply that adjustment costs and/or benefits of adjustment are asymmetrical for overleveraged and underleveraged banks (Drobetz *et al.*, 2013). Then, the plausible explanation for a relatively quick rate of overleveraged banks can be the presence of higher benefits of increasing capital ratio/decreasing leverage (reducing costs of distress, agency costs of debt and regulatory pressure costs) than benefits of decreasing capital ratio/increasing leverage (benefits of tax shield and reducing agency problems of free cash flows) (Drobetz *et al.*, 2013). Moreover, adjustment costs may be lower for overleveraged (undercapitalized) banks than for overcapitalized (underleveraged) banks (Byoun, 2008).

Further, the survey result also disclosed that the size of banks significantly associated to the asymmetrical target capital structure adjustment[47]. Specifically, the tendency of overleveraged banks to adjust faster is found to be higher in larger banks than in their smaller counterparts (Table 6.9). This survey result supports the prediction that larger banks have easier access to raise funds via external equity financing to increase their capital ratio when undercapitalized or overleveraged than smaller banks.

6.3.2.3. Heterogeneous Target Capital Structure Rate of adjustment

In examining the possible heterogeneity in target capital structure adjustment, the study estimates the dynamic panel model of heterogeneous capital structure adjustment (Table 6.6). In these estimations, the deviations (absolute) from target leverage, size, growth, liquidity, regulatory pressure for capital adequacy and ownership are included as the determinants of the speed of adjustment. Thus, estimation results revealed the existing cross-sectional heterogeneity in the rate of adjustment (Table 6.6).

- **Deviation (Absolute Deviation) from target and Target Adjustment**

To investigate the possible heterogeneity in the rate of adjustment, the study firstly tested the effect of deviation (absolute deviation) of banks from their target leverage on the rate of adjustment ((Table 6.6). In the Difference GMM and the System GMM estimations, the coefficients of the interaction between deviation from target leverage and lagged leverage are found to be positive and

[47] However, both liquidity and ownership of banks insignificantly associated with the asymmetrical target capital structure adjustment dynamics of banks (Table 6.9.)

statistically significant at 1% level and 10% level, respectively (Table 6.6). Because of the specified negative sign in the dynamic panel model equation, the estimated result implies that the effect of deviation from target leverage on the speed of adjustment is found to be negative. In comparison to past studies, this evidence is consistent with the reported results in UK firms (Dang *et al.*, 2008). On the contrary, this finding contradicts the findings of Drobetz & Wanzedrid (2006) in Swedish firms and the findings of De Haas & Peeters (2004) in the selected transition countries.

The finding supports the view that adjustment costs tend to increase with the deviation from target (Dang *et al.*, 2008). Banks deviating significantly far away from their target tend to adjust slowly (Dang *et al.*, 2008). The alternative explanation of the finding may be the preference of Ethiopian banks for internal adjustment over external adjustment (Heshimite, 2001; Dang *et al.*, 2008). The preference of internal adjustment may be to avoid the possible prohibitively high fixed costs of external adjustment through stock issuance spontaneous to deviation (Drobetz & Wanzenried, 2006; Dang *et al.*, 2008). However, this internal adjustment depends on the magnitude of internal funds availability and dividend payout policies (Drobetz & Wanzenried, 2006; Dang *et al.*, 2008). Moreover, internal funds of banks may be earmarked for the use of other competing priorities of banks (Dang *et al.*, 2008). Hence, due to the possible constraints of internal funds availability and relatively "sticky" payout policies of banks, this internal adjustment may be slower than external adjustment (Drobetz & Wanzenried, 2006; Dang *et al.*, 2008). On the contrary, the finding rejects the prediction that rebalancing costs may mainly constitute fixed cost and then banks that considerably deviate from the desired leverage tend to adjust quickly (Heshimite, 2001; Drobetz & Wanzenried, 2006; Dang *et al.*, 2008).

Size and Target Adjustment

In the Difference GMM and System GMM estimations of the heterogeneous capital structure adjustment model, the coefficients of interaction terms of size and lagged leverage are found to be negative and statistically significant at 1% level and 5% level, respectively (Table 6.6). Considering the specified negative sign of interaction terms in the estimated dynamic panel model, the result implies that size of banks are positively related to the speed of adjustment of banks towards the target (Drobetz & Wanzedrid, 2006; Flannery & Hankins, 2007). Compared to past studies, this evidence is in line with the results of Lööf (2003) and Banerjee *et al*(2000) in UK firms. In contrast, the finding is inconsistent with the finding of Drobetz & Wanzenried (2006) in Swedish firms.

This evidence supports the view that adjustment cost is lower for larger banks than smaller banks (Heshimitie, 2001). If the adjustment cost mainly constitutes fixed costs, the economics of scale advantage of larger banks would be far better than smaller banks (Heshimitie, 2001; Dang *et al.*, 2008). Alternatively, the finding may be explained based on the view that the expected lower cost of external financing in adjustments of larger banks than smaller counterparts (Drobetz & Wanzenried, 2006). Consistent to the prediction of the too-big-too fail hypothesis and their diversification possibilities, larger banks can raise funds easily, and then adjust readily than smaller banks (Drobetz & Wanzenried, 2006). However, this finding refutes the opposing argument that larger banks would have less incentive to adjust towards the target due to their expected less earnings volatility and costs of distress (Drobetz & Wanzenried, 2006; Dang *et al.*, 2012).

- ***Growth Opportunities and Target Adjustment***

The effect of growth opportunities of banks on the dynamics of capital structure adjustment is also envisaged. In both Difference GMM and System GMM estimations, the coefficient of the interaction between growth and lagged leverage is found to be statistically insignificant (Table 6.6). In comparison to past studies, this evidence contradicts findings by Drobetz & Wanzenried (2006) in Swedish firms and by Dang *et al.* (2008) in UK firms.

This result implies that growth opportunity is not relevant to explain the possible cross-sectional heterogeneity in the capital structure adjustment dynamics of Ethiopian banks. In effect, the finding rejects the prior prediction that low growth opportunities of firms imply a relatively less reliance on the external financing than high-growth firms. Hence, low-grow firms can easily adjust their capital structure due to the expected low information asymmetry related costs in rebalancing (Dang *et al.*, 2008). Besides, this evidence is inconsistent with the opposing argument that high growth opportunities of firms imply frequent visits of different sources of finance, and then, they would have wide rooms to change their financing mix readily than low-growth firms (Dang *et al.*, 2008). Further, this evidence is inconsistent with the view that low-growth opportunities of firms imply the tendency of firms to rely on internal adjustment than external adjustment (Dang *et al.*, 2008). Hence, as it may be impaired by internal fund availability, the rate of internal adjustment of low growth is expected to be slow (Drobetz & Wanzenried, 2006; Dang *et al.*, 2008).

- **Liquidity and Target adjustment**

In estimating the heterogeneous capital structure adjustment model equation, the coefficient of interactive variable of liquidity and lagged leverage is found to be statistically insignificant

consistently in Difference GMM and System GMM estimations (Table 6.6). This evidence is inconsistent with the finding of Memmal & Raupach (2007) in banks of Germany.

This evidence rejects the prediction that highly liquid banks holding relatively less risky assets tend to adjust faster than banks with relatively high illiquid loans (Memmal& Raupach, 2007). Besides, this evidence also rejects the view that highly liquid banks imply holding excess free cash flows that is more susceptible to agency problems of expropriations (Jenson, 1986; Panno, 2003) and tend to adjust slowly.

- **Regulatory Pressure for Capital adequacy and Target Adjustment**

In both Difference GMM and System GMM estimations, the coefficient of the interaction terms of regulatory pressure for capital adequacy and lagged leverage are found to be negative and statistically significant at 1% and 10% levels, respectively (Berger *et al.*, 2008). Given the negative sign of interaction term in the specified dynamic model, estimation results imply the presence of a positive effect of regulatory pressure for capital adequacy on the speed of adjustment. The finding is consistent with the empirical evidence documented by Berger *et al.* (2008) in US large banks.

The finding suggests that low-capitalized Ethiopian banks that hold capital ratio below the industry average tend to adjust towards the desired leverage at a rapid pace than highly capitalized banks. At first, the finding supports the view that as the regulatory pressure for capital adequacy in the low-capitalized banks would be higher than in highly capitalized banks, they tend to adjust quickly (Berger *et al.,* 2008). The other plausible explanation is that most of the low-capitalized Ethiopian

banks are relatively large in size compared to highly capitalized banks (Table 6.2). In effect, these banks can raise funds easily and tend to adjust readily toward the target.

- **Ownership of Banks and Target Adjustment**

To test the possible differences in the speed of capital structure adjustment, the dummy variable for ownership of banks is interacted with lagged leverage and estimated (Table 6.9). In both the Difference and System GMM estimations, the coefficient of interaction term of ownership and lagged leverage is found to be positive and statistically significant at 5% level (Table 6.9). Once again, considering the specified negative sign in the dynamic model estimated, the result implies the private ownership of banks is negatively related with the rate of adjustment towards the target. In comparison, this finding is inconsistent with evidence reported by Memmal & Raupach (2007) in banks of Germany.

This finding contradicts the prior prediction that private banks adjust towards the target at a rapid pace than publicly owned banks. Specifically, the result rejects the view that, as the primary objective of private banks is shareholders' wealth maximization and facing high costs of market pressure than public banks, they tend to maintain leverage within a narrow interval and adjust quickly than public banks (Memmal & Raupach, 2007). The possible explanation of the finding is that public-owned banks in Ethiopia are relatively dominant, aged in history of banking of Ethiopia, reputable and highly diversified than private banks. Hence, they can adjust readily by choosing among alternative sources of financing with low costs of rebalancing than private bank in Ethiopia.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

7.1. Introduction

The study examined the determinants of capital structure and the existing dynamics of capital structure adjustment in banks of Ethiopia. To this end, secondary data in panel data set have been collected from the annual reports of the selected 14 commercial banks over a period time from 2000 to 2012. Moreover, the study collected primary data from the survey responses of selected chief financial officers (CFOs) of banks[48]. Further, the study estimated panel data models both in static and dynamic frameworks and analyzed the cross-sectional survey responses using appropriate statistical techniques. This chapter constitutes the conclusion of the study and recommendations for further research.

7.2. Conclusion

The study investigates the determinants of the capital structure and capital structure adjustment dynamics based on estimation of static and dynamic panel models and cross-sectional survey.

Evidences on the determinants of the capital structure of banks in both static panel model and symmetrical dynamic panel model estimations revealed the existence of a significant positive coefficient of effective tax rate, thereby supporting the predictions of the tradeoff theoretical model. Likewise, a significant negative coefficient of growth in regressing against leverage of banks in Ethiopia has been documented in the static panel model estimation. This finding is consistent

[48] It includes also Finance Directors, Fund managers, Treasurers and Controllers.

with the prediction of the tradeoff theory, but it contradicts the prediction of the pecking order theory. In contrast, estimation results on profitability support the predictions of the pecking order theory and yet reject the views of the tradeoff theory. Consistently, in both static and dynamic frameworks, the coefficient of profitability is found to be negative and significant in regressing against leverage of banks in Ethiopia. Similarly, the cross-sectional survey results on the determinants of the capital structure of banks disclosed that the tax shield of interest deductibility, profitability and/or size of free cash flows, and investment policy or growth opportunities are important and very important factors in the capital structure decision of banks. However, the collateral values of assets, size and earnings volatility are found to be statistically insignificant in regressing against leverage of banks in Ethiopia, consistently in both static and symmetrical dynamic panel models estimations. These results reject the predictions of both the tradeoff and the pecking order theoretical models. However, the survey results revealed that earnings volatility or change in profitability is rated as important or very important determinant of the financing decision of banks.

Further, evidence on the determinants of the capital structure of banks in panel model estimation also revealed that the regulatory pressure variable for the minimum capital requirement is significantly related to leverage of banks in Ethiopia. Specifically, in both static and symmetrical dynamic panel model estimations, the regulatory pressure on the minimum capital requirement is found to be negatively and significantly related with leverage of banks in Ethiopia. In contrast, the relationship between regulatory pressure for capital adequacy and leverage is found to be positive and statistically significant consistently in both static and symmetrical panel model estimations. In the cross-sectional survey, maintaining the minimum capital requirement is found to be an

important and a very important factor in the financing decision of banks. Banks usually tend to hold capital above the regulatory minimum.

Evidence on the symmetrical capital structure dynamics showed that banks in Ethiopia set the target capital structure and tend to adjust towards it at a fairly rapid symmetrical partial speed of adjustment. Similarly, the cross-sectional survey result revealed the banks' tendency of target capital setting behavior. In estimation of asymmetrical capital structure adjustment model equation, the target capital structure adjustment dynamics is also found to be asymmetrical, in that the rate of adjustment of overleveraged or undercapitalized banks is shown to be higher than the speed of adjustment of underleveraged or overcapitalized banks. As corroboration, in the cross-sectional survey, the rate of adjustment is found to be asymmetrical, whereby undercapitalized (overleveraged) banks adjusts faster than overcapitalized (underleveraged) banks. This asymmetrical rate of adjustment is also found to be heterogeneous, conditional on size of banks. The documented evidence also revealed heterogeneity in the speed of adjustment towards target. To be specific, the banks' speed of adjustment towards the target capital structure depends on their absolute deviation from target, size, regulatory pressure for capital adequacy and ownership, in estimating the dynamic panel model. However, the growth opportunities and liquidity of banks are found to be insignificant to induce heterogeneity in the speed of adjustment towards the target.

To sum up, these documented evidences of the present study would have academic contributions and policy implications, as discussed in the following subsections, respectively.

7.2.1. Academic Contributions

By empirically investigating the determinants of the capital structure and dynamics of capital structure adjustment of Ethiopian banks, the study contributes to filling the gaps in the literature in many ways:

Firstly, despite a large number of studies have been documented on capital structure, surprisingly there are an insignificant/inadequate number of studies carried out to examine the possible asymmetrical and/or heterogeneous capital structure adjustments of banks. This is particularly true for banking firms of developing countries. Hence, the study contributes to filling the gap in literature as it explicitly examined the possible asymmetrical and/or cross-sectional heterogeneity in the target capital structure adjustment dynamics of the banking sector in Ethiopia.

Secondly, most of previous empirical studies on the capital structure of firms that have tested the tradeoff and the pecking order theories mostly neglect banks and other financial firms (Gropp & Heider, 2009; Baranoff *et al*, 2008). On the other hand, previous studies on the capital structure of banks have mainly focused on regulatory factors (Gropp &Heider, 2009). Therefore, by integrating the standard corporate finance theory and regulatory view of banks' capital structure, the study contributes to the extant body of academic literature in two main ways. First, different factors that are predicted in the tradeoff and the pecking order theoretical models and found to be valid in the existing empirical literature on corporate nonfinancial firms in developed countries also hold in the context of Ethiopia. Specifically, these factors are found to be significant to explain the capital structure decision and target capital structure adjustment dynamics of firms in least developing countries, particularly in banks of Ethiopia. Then, these would imply (i) that the capital structure

decision of banks in Ethiopia is not at random as propounded in the MM irrelevance proposition (Modigilani & Miller,1958; Gaud *et al.*,2003); (ii) that capital regulation is not the only friction that constitutes the overriding departure from the MM irrelevance proposition as advocated in a regulatory view of banking literature; and (iii) that, despite the fact that the pecking order and the tradeoff theoretical models are not found to be mutually exclusive, the tradeoff (or target adjustment) theoretical model is more powerful than the pecking order theoretical model to explain the financing behavior of banks in Ethiopia. Second, pertinent regulatory pressure on the capital holdings of banks is found to be relevant to explain the financing decision of banks. Hence, the empirical evidences documented in the present study would transcend the previous evidences documented in the literature on capital structure of banking and nonfinancial firms. These results would imply that factors predicted in the corporate finance theoretical models or market forces alone do not explain the capital structure decision and adjustment dynamics of banks in Ethiopia. Regulatory pressure factors interact with the market forces to explain the financing decision of banks. This is a particularly important contribution to the existing body of literature on the banking sector, as the study was based on actual data on the regulatory pressure factors typical to the banking sector in Ethiopia which operates in the absence of explicit deposit insurance[49].

Further, in midst of the existing puzzles in capital structure and lack of studies in the least developing countries, particularly in Ethiopia, the study will extend the empirical literature by providing evidences on the explanatory power of theoretical models in the context that differs from

[49] In its presence, banks are expected to hold low capital ratio from their moral hazard tendency (Wall & Peterson, 1996). Hence, capital regulation would be binding (Sharp, 1995; Brewer *et al.*, 2008).

their originations (Rajan & Zinglas, 1995). Specifically, the study tries to untangle the capital structure decision of banks, especially its dynamics, under the context of the least developed financial system where there is no secondary market and oligopolistic financial sector.

7.2.2. Practical/Policy Implications

The documented findings of the study would have several practical/policy implications, as summarized below.

First, the study contributes by drawing attention to the mundane practices of the capital structure policy formulation of bank managers. The capital structure decision of banking firms is one of the key strategic decisions, whereby the documented evidences would call up on managerial attention. Despite the fact that the findings of the study would provide empirical support to the tradeoff or target capital structure adjustment theoretical model[50], there is a need to a clear understanding of the determinants of capital structure and adjustment dynamics and thereby, the wealth of shareholders of banks may be further maximized. Hence, in the strategic financial decision of banks, CFOs (financial managers) need to understand how the factors in theoretical models, including taxation, costs of distress, agency cost and information asymmetry, interact with the regulatory pressure.

Second, in the target capital structure adjustment dynamics, the study revealed the general tendency of banks to adjust quicker when overleveraged (undercapitalized) than when underleveraged (overcapitalized). Besides, in the heterogeneous capital structure adjustment

[50] This tendency of banks may be attributable to deregulation of financial sector in Ethiopia in the post-1994 period.

dynamics, the negative relationship between target adjustment and private ownership of banks has been documented. This tendency of banks may be related to the agency problems. In the agency problems, the management of banks may hold excess equity capital ratio in pursuit of a "riskless, quiet life" (Wong *et al.,* 2005). Moreover, in the presence of banks with a widely dispersed ownership, bank managers (or the agents) may prefer excess equity capital holding and keep long excursions from the desired leverage or capital ratio (Wong *et al.,* 2005). But these possible actions of bank managers (management) would be at the expense of the shareholders of banks (Jenson & Meckling, 1976; Wong *et al.,* 2005). Thus, there is a need to consider such agency problems in bank capital regulation (Wong *et al.,* 2005).

Further, in estimations of both static and dynamic panel models, the effect of the regulatory pressure for capital adequacy is found to be significant and positive. The result implies that the low-capitalized banks that hold capital ratio below the industry average tend to increase leverage. This result would have two implications for policymakers. First, even though the capital holdings of low-capitalized banks fall below the industry average, they hold capital in excess of the regulatory minimum. The other implication is that the effectiveness of peer-based regulatory pressure for capital adequacy is questionable. Finally, in the evidences documented in both static and dynamic panel models estimations, the effect of the minimum paid up capital requirement on banks' capital holding is found to be significant. Similarly, the survey results also disclose the presence of banks holding capital in excess of the minimum regulatory requirement. In light of the deregulation of the banking sector, these results imply the effectiveness of the prevailing regulatory pressure on

capital holding of banks in ensuring the desired bank solvency and financial stability[51]. However, the continual of tightening of the policy instruments on capital regulation would imply the deleveraging of the banking sector and then the deleveraging of the rest of the economy (*European Banking Federation,* 2010). Hence, in all efforts to design and revise the instruments of banks' capital regulation, there is a need to consider the possible tradeoff between the risk of deleveraging banks to maintain the desired solvency and financial stability and the risk of leveraging banks to induce investment that can accelerate economic growth (*European Banking Federation*, 2010).

7.4. Recommendations for Further Research

Given the limitations stated in Chapter Five, further research can be conducted in the following perspectives:

- **Comparative Study – T**he present study focused only on examining the determinants and capital structure adjustment dynamics of the banking industry in Ethiopia. This may limit the implications of evidences on the validities of theoretical models and regulatory pressure for other financial firms of the sector. Hence, as there is a notable development and expansion of the insurance industry and microfinance institutions (enterprises) in Ethiopia, there is a need to test the generalizability of the findings across all firms in the financial sector. Besides, available few studies done using data of Ethiopian firms are limited to examining the determinants of financing decision of firms only in static framework. As a

[51] The leverage ratio or capital ratio decisions of banks are closely linked to financial and economic stability (Santos, 2001). This can be easily discernible in the observed economic scramble in the aftermath of the current financial crises (Buehler *et al.*, 2009).

result, there is a need of further comparative study that will examine the adjustment dynamics of nonfinancial firms of Ethiopia. Further, as can be read in the literature on banking, there are theoretical contributions that attempt to explain the cross-sectional variations in the optimal bank capital structure driven by the market pressure (Gropp & Heider, 2009). As the lead proponents of this theoretical perspective of bank capital, Diamond & Rajan (2000) hypothesized that the optimal bank capital structure would be obtained at the point that balance the capability to create liquidity and credit with stability [52]. Hence, there is a need of further study that will examine the cross-sectional variations in capital structure as a reflection of banks catering to different clienteles (Diamond & Rajan, 2000; Gropp & Heider, 2009) and compare the results with the documented evidences in the present study.

- **Cross-Country Study** - The study also examined the capital structure decision of banks operating in a single country. In effect, this may limit the robustness of the findings. Thus, considering the cross-country differences in macroeconomic and regulatory factors, there is a need to test the robustness of the findings on determinants of bank capital structure and capital structure adjustment dynamics across different countries.

- **Corporate Governance and Target Capital Structure Adjustment Dynamics** - In the target capital structure adjustment dynamics of firms, there is a wide range of theoretical and empirical literature that examined the corporate governance and target capital structure

[52] This suggests that banks' capital structure is a function of the degree to which the banks' customers rely on liquidity and credit (Diamond & Rajan, 2000).

adjustment of firms. Hence, there is a need for further study that will examine in depth the validities of target capital structure adjustment models, by explicitly examining the corporate governance factors and adjustment dynamics of banks.

- **Methodological Issues -** Due to lack of ample observations inherent in the limited number of target population and then the sample size[53], the study has been limited to test the dynamic tradeoff theory, looking for the presence of unique target capital structure in the panel model estimation. For a similar reason, factors in the cross-sectional survey have been examined based on firsthand data or responses gathered (from CFOs of banks) using a questionnaire that constitutes items that directly ask about the relationship between factors and financing decisions. Hence, to directly test the prediction of the dynamic tradeoff model, further research needs to be conducted based on the dynamic panel model[54] that allows to directly test the presence of a target leverage (or, a target capital ratio) range in which banks may choose to swing through time rather than unique target (Fisher *et al.*, 1989; Leary & Roberts, 2005; Dang *et al.*, 2008). Besides, to minimize the possible response bias of the instrument (questionnaire) that directly asks about the relationship between factors and financing decisions, further research may be conducted based on the

[53] Attributable to the recent history of private banking sector in Ethiopia

[54] In this regard, Dynamic Panel Threshold model (Dang *et al.*, 2008) and Hazard analysis (Leary & Roberts, 2005) may be helpful.

survey instrument that directly asks about only the determinants rather than about the relations to be examined (De Jong &van Dijk, 2001; De Jong et al, 2003)[55].

[55] The relationship may be examined by regressing the responses to the determinants and financing decisions using the structure equation modeling ((De Jong &van Dijk, 2001; De Jong *et al.*, 2003)[55].

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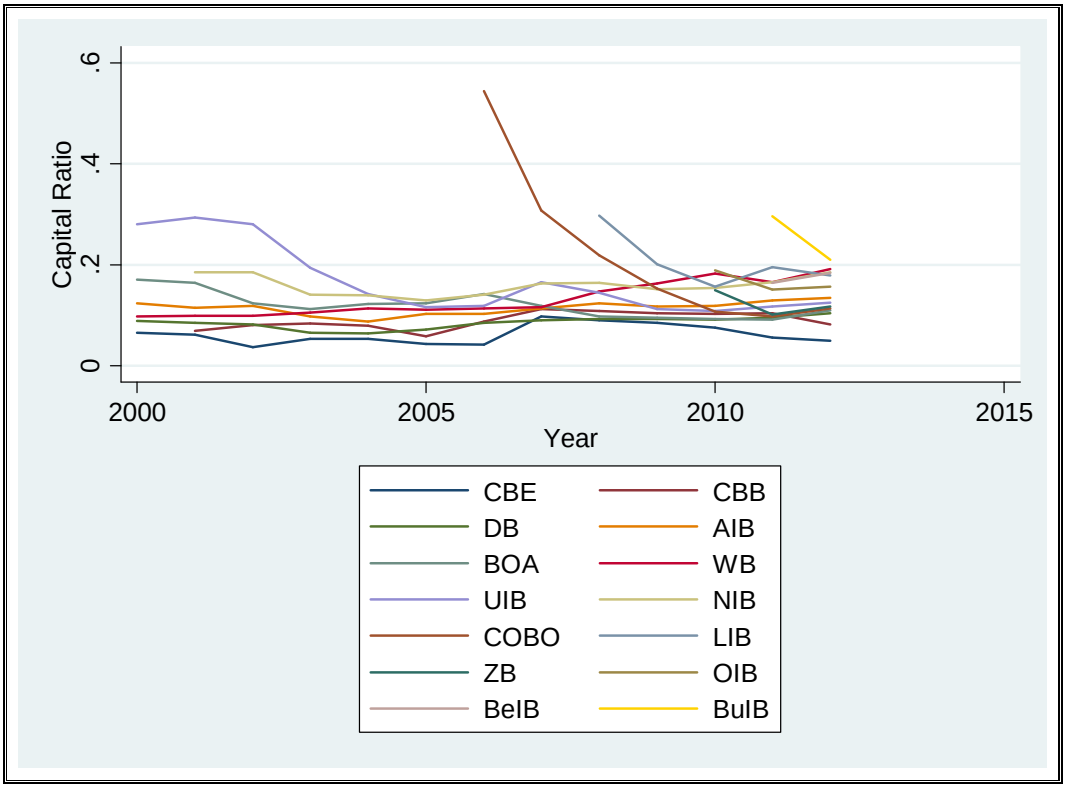
ANNEXES

Annex 1- Equity Capital Ratio

Figure 8.1- Cross Sectional and Time Series Variations of Equity capital Ratio of banks in Ethiopia



Source : Annual Report of banks to National Bank of Ethiopia

Annex 2- Normality Test

Figure 8.2- Residual Plot

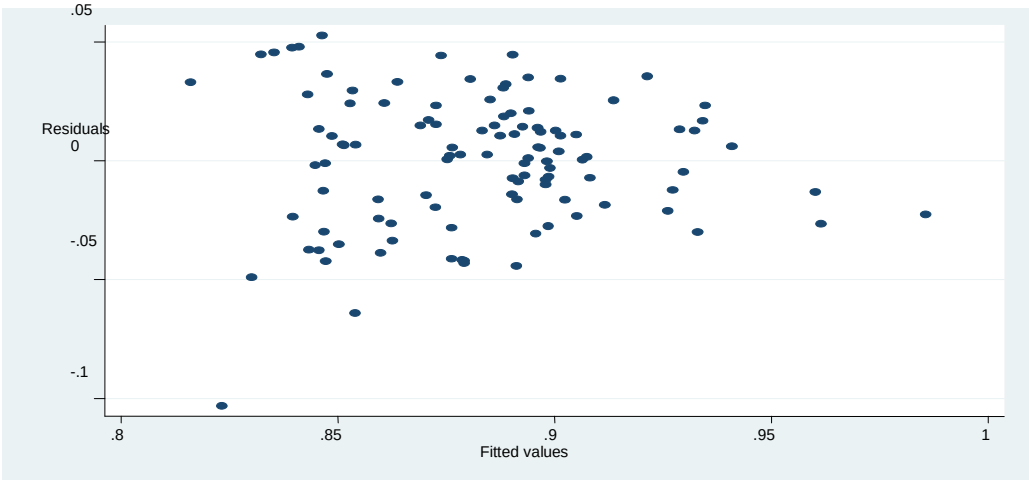
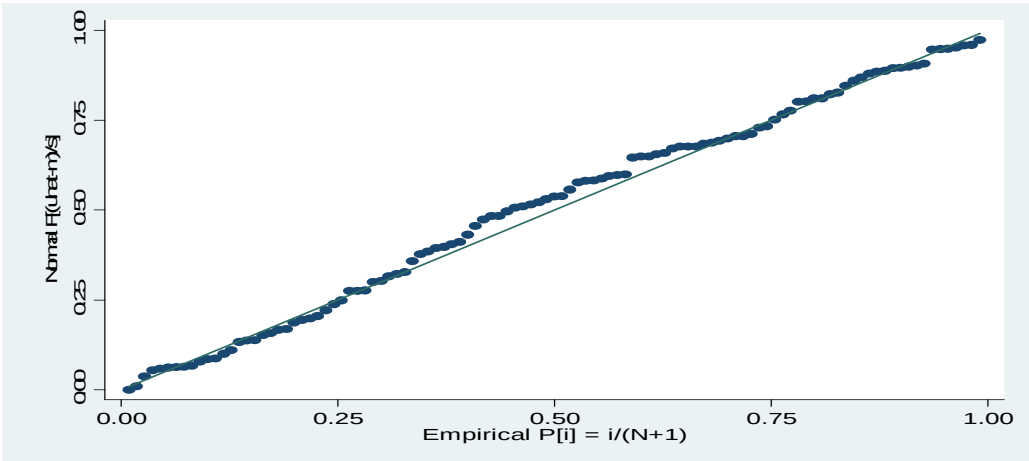


Figure 8.3-Normal Probability (P-P) plot



Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
uhat	109	0.98130	1.660	1.129	0.12946

Annex 3- Survey Instrument

Questionnaire

Dear Sir/Madam

This is the survey questioner developed to conduct a research entitled *"Capital Structure Decision of firms: Evidences on Determinants and Dynamics of Capital structure in Banks of Ethiopia"*. The purpose of this research is in the fulfillment of Doctor of Business Leadership Degree at UNISA.

Hence, your sincere cooperation to fill the enclosed questioner is highly appreciable. It will take few minutes to complete filling the questioner and you may found it enjoyable experience. As there are very few respondents for the survey, your response will be highly important. I assure that all responses will be kept strictly as highly confidential.

Thank you in Advance for your Cooperation!

Sincerely,

Teramaje Walle Mekonnen

Mobile No- 0934-55550

General Instruction for filling the Questionnaire

This questionnaire includes several questions that will help us to understand different factors or determinants of capital structure and capital structure adjustment dynamics in banks. There are no right or wrong answers to any of these questions. This questionnaire has also several different kinds of questions that appear in different formats. It may ask you to circle the number for rank of alternatives or check or put tick mark in the circle.

Below are examples of how to do this.

Circle the appropriate number

Not important	Little important	Fairly important	Important	Very important
1	2	(3)	4	5

Check one

Yes (✓) No ( )

Please be sure that you choose the response that comes closest to how you feel. Be sure to look at the different answer choices before answering.

Definition of Key Terms in the Questionnaire

- *Capital Structure*- the mix of debt and equity capital financing of a bank.
- *Debt financing*- the proportion of funds raised from deposits and other borrowings.
- *Equity capital financing*- the proportion of funds raised from shareholders or retention.
- *Target Capital structure*- the mix of debt and equity financing that balance the marginal costs of debt financing or equity financing with the marginal benefits of debt financing or equity financing.
- *Target or Desired Capital ratio* - the ratio of equity financing to total asset of a bank that balance the economic costs of equity financing with the economic benefits of equity financing.

1. Please indicate the relative importance of the following factors in the capital structure decision of your bank *(Please circle one response for each item-On a scale of 1 to 5).*

No	Items	Not Important	Little Important	Fairly Important	Important	Very Important
a	The tax advantage of interest deductibility from debt finance	1	2	3	4	5
b	The level of interest rates on deposits & other debts	1	2	3	4	5
c	Available tax economies related to other non taxable allowance(such as depreciation)	1	2	3	4	5
d	Risk and costs of financial distress and insolvency	1	2	3	4	5
e	The volatility of bank's earnings and cash flows (the change in bank's profitability)	1	2	3	4	5
f	Size of free cash flows	1	2	3	4	5
g	Financial flexibility or Profitability	1	2	3	4	5
h	Investment policy or Growth Opportunities	1	2	3	4	5
i	The consequences of breaching regulatory capital requirement	1	2	3	4	5
j	Capital held by your bank's peers	1	2	3	4	5
k	Change in the regulation and supervision framework	1	2	3	4	5

2. Please indicate the extent to which you agree with the following general statement regarding the financing decision of your bank *(Please circle one response for each item-On a scale of 1 to 5).*

No	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a	Use of deposits & other debts would decrease relative to equity if debt interest were no longer tax deductible.	1	2	3	4	5
b	The decision to issue debt or equity is affected by the existence of tax loss carry forwards.	1	2	3	4	5
c	We issue common stock to complement to risk management	1	2	3	4	5
d	A bank issues shares , though present needs are not great, to build up a cushion against unexpected losses arising from material risks to be faced.	1	2	3	4	5
e	We issue debt when our recent profits are not sufficient to fund our activities	1	2	3	4	5
f	We issue common stock when we are unable to obtain funds using other sources	1	2	3	4	5
g	We issue debt when we have accumulated profits	1	2	3	4	5
h	A bank issue common stock to finance long term business growth strategy	1	2	3	4	5
i	Given the regulatory capital requirement, we assess how much additional capital we should hold.	1	2	3	4	5
j	We assess capital needed to run the business & then, verify whether it meets regulatory requirement	1	2	3	4	5

3. In raising new funds, your bank:

a	Seeks to maintain a target capital structure by using approximately constant proportions of debt and equity financing simultaneously. (*Check or put tick mark in one circle only).*	Yes No
b	Follows a hierarchy in which the most advantageous sources of funds are exhausted before other sources are used. (*Check or put tick mark in one circle only).*	Yes No

4. Indicate the extent to which your bank seeks to maintain the target debt to equity ratio in raising new funds. (*Check or put tick mark in one circle only).*

a	Very Strict Target		c	Flexible Target	
b	Somewhat Tight Target/Range		d	No Target Ratio or Range	

5. Please indicate how your bank desired capital differs from actual capital. (*Check or put tick mark in one circle only).*

a	Actual capital ratio usually exceeds desired equity capital ratio	◯	c	Desired capital ratio is usually very close to actual capital	◯
b	Desired capital ratio usually exceeds actual capital ratio	◯	d	Actual capital ratio may exceed or fall below desired capital ratio	◯

6. Indicate the extent to which your bank's actual capital adjusts towards the target or desired capital ratio in the deviations. *(Please circle one response for each item, on the scale of 1 to 5).*

No	Items	Very Unlikely	Unlikely	Neutral	Likely	Very Unlikely
a	If actual capital ratio is above desired capital ratio, we will reduce the actual capital ratio as quickly as possible	1	2	3	4	5
b	If actual capital ratio is below desired capital ratio, we will increase the actual capital ratio as quickly as possible	1	2	3	4	5

7. Suppose your bank's actual capital deviates from desired capital.(*Check or put tick mark in one circle only).*

a	Actual capital will be adjusted to meet desired capital more quickly if actual capital exceeds desired capital than if the opposite(that is, if desired capital exceeds actual capital) is the case	◯
b	Actual capital will be adjusted to meet desired capital more quickly if desired capital exceeds actual capital than if the opposite(that is, if actual capital exceeds desired capital) is the case	◯
c	The pace of adjustments in both cases will be the same	◯

8. Please indicate the firmographics (bank characteristics) that best describe your bank. (*Check or put tick mark in one circle only).*

a	Ownership of the bank	◯ Public	◯ Private	
b	Total assets of the bank(at the end of year 2012)	◯ <Br4bil	◯ Br4-8bil	◯ >Br8bil
c	Liquidity ratio of the bank(at the end of year 2012)	◯ <30%	◯ 30-45%	◯ >45%

9. Please indicate the demographics that best describe the respondent. *(Check or put tick mark in one circle only)*

a	Your current position in the bank				
b	Your experience in the current Job	◯ <4years	◯ 4-9years	◯ 9-15 years	◯ < 15years
c	Age	◯ <40years	◯ 40-49years	◯ 50-59 years	◯ > 60years
d	Educational Level	◯ BA/BSc	◯ Masters	◯ >Masters	

===End ===

=== Thanks A lot for Your Participation!!!==

Annex 4- Ethical Clearance Certificate