Addis Ababa University

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School of Commerce

Impact of Dividend Payout Ratios and Dividend per Share on ROE: Panel Evidence from Ethiopian private banks (2005 – 2024)

A Thesis Submitted to the School of Commerce of Addis Ababa University, in the Partial Fulfilment of the Requirements for the Degree of Master of Corporate Finance, specialty in investment management

Thesis

By

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Declaration

I, the undersigned, declare that this thesis entitled: “Impact of dividend policy on the performance of private commercial banks in Ethiopia’’ is my original work. I have undertaken the research work independently with the guidance and support of the research supervisor. This study has not been submitted for any degree program in this or any other institution, and all sources of materials used for the thesis have been duly acknowledged.

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Name of Student Signature Date

Statement of Certification

This is to certify that the thesis prepared by Ananiya Seyoum**,** entitled "Impact of dividend policy on the performance of private commercial banks in Ethiopia.'' and submitted in partial fulfillment of the requirements for the Degree of Master's of Corporate Finance specialty in investment management. /MSC/ in complies with the regulations of Addis Ababa University and meets the accepted standards for originality and quality.

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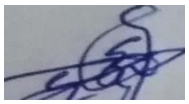
Dr Takele Fufa		July 8 2025
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Abstract

The research evaluates how Dividend Payout Ratio (DPR) and Dividend per Share (DPS) affect private commercial bank performance in Ethiopia during the period from 2005 to 2024. The research addresses financial stability concerns through an unbalanced panel dataset of 10 banks using GLS regression and random-effects models. The research demonstrates a direct negative relationship between DPR and ROE which shows that high dividend payments reduce reinvestment capital thus decreasing profitability. The signaling theory receives support from DPS's consistent positive influence on profitability metrics. The study shows that GDP growth strengthens bank performance but inflation produces only small effects. The research findings demonstrate that Ethiopian banks need to develop strategic dividend management approaches to achieve better performance and reduce financial risks. Banks should maintain a DPR between 30% and 50% to achieve shareholder returns and retained earnings balance while using stable DPS as a signaling tool to boost investor confidence and maintain a leverage ratio between 3:1 to 4:1 for optimal capital management. Banks need to perform regular assessments of their dividend and leverage strategies while maintaining open communication with stakeholders to ensure their policies match stakeholder expectations and economic conditions. The research provides essential guidance to bank regulators and policymakers for promoting sustainable growth in the Ethiopian banking sector.

Keywords: Dividend Payout Ratio, Return on Equity, Bank Performance, Economic Growth

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List of Acronyms and Abbreviations

AIB	AWASH BANK S.C
BOA	BANK OF ABYSSINIA S.C
BS	BANK SIZE
CBO	COOPERATIVE BANK OF OROMIA S.C
D_BS4	DIFFERENTIATION OF BANK SIZE
FEM	FIXED EFFECT MODE
HB	HIBRET BANK S.C
IMF	INTERNATIONAL MONETARY FUND
LB	LION BANK
LEV	LEVERAGE
NB	NIB BANK S.C
NBE	NATIONAL BANK OF ETHIOPIA
OB	OROMIA BANK
REM	RANDOM EFFECT MODEL
WB	WEGAGEN BANK S.C
ZB	ZEMEN BANK S.C

Chapter One: Introduction

1.1. Background of the Study

Corporate finance depends heavily on dividend policy as a fundamental aspect because it shapes both shareholder value and organizational growth within banking institutions. Research about dividend policies has undergone significant changes throughout the past thirty years because these policies affect how firms perform. The private banking sector in Ethiopia underwent major changes during the early 2000's because of liberalization policies that created more competition and investment opportunities (National Bank of Ethiopia [NBE], 2024). Banks operating in today's changing economic environment need to understand the effects of dividend policies on their financial performance because this understanding is becoming more vital.

A bank's financial health is revealed through its two main dividend policy elements which consist of Dividend Payout Ratios (DPR) and Dividends per Share (DPS). A bank's dividend distribution ratio (DPR) shows what percentage of earnings go toward dividends while DPS reveals the specific amount of cash returned to each shareholder. Investors use these metrics to assess both bank profitability and management expectations for future earnings thus making them essential for performance evaluation (Samuel, 2017).

Multiple fundamental theories make up the historical foundation of the dividend debate. According to the Dividend Irrelevance Theory developed by Miller and Modigliani (1961) dividend policies become irrelevant for firm value because investors can generate their own dividend streams through share transactions. The Signaling Theory contradicts this theory by showing that dividend changes serve as signals for future company prospects. Financial health signals emerge through higher dividend payments but dividend reductions indicate potential distress to investors (Lintner, 1956).

The current research in Ethiopia shows a scattered interpretation of these theoretical frameworks. Research by Nebiyu and Tilahun (2013) reveals that financial performance experiences negative effects when dividends are paid out. Higher dividend payments reduce the amount of money available for reinvestment which in turn impacts financial performance indicators such as Return on Assets (ROA) and Return on Equity (ROE). The research by Adimasu (2019) along with other

studies indicates a positive link between dividend payments and profitability because stable dividend payments help demonstrate financial stability and attract investor interest.

Research findings on dividend effects show an ongoing debate which reveals substantial knowledge gaps about how DPR and DPS influence bank performance. Research on dividend policy focuses primarily on single components without accounting for Ethiopian banking sector characteristics or extends findings from different contexts to this particular sector. The theoretical models regarding dividend policy, which global research has developed including the signaling theory and bird-in-the-hand theory require further evaluation to validate their effectiveness within the Ethiopian market.

The current literature fails to explore how macroeconomic conditions impact the decisions regarding dividend policies. Banks operating in developing markets such as Ethiopia face substantial effects from inflation rates and economic expansion and regulatory transformations which shape their dividend planning approaches. The insufficient knowledge about this specific context makes it difficult to forecast how dividend policies impact on financial performance.

The research aims to deliver an extensive investigation about how dividend policies affect financial performance in Ethiopian private banks. This study uses panel data from 2005 to 2024 to evaluate how Dividend Payout Ratios and Dividends per Share affect Return on Equity which will enhance existing research knowledge. The research findings provide bank management and policymakers and investors with effective dividend strategies that promote financial stability and performance.

1.2. Statement of the Problem

The banking sector is the cornerstone of the economic development, particularly in emerging economies like Ethiopia. Studies on the impact of dividend policy are often country-specific. Nissim and Ziv (2015) showed that changes in earnings drive changes in dividends across 33 countries. Studies in specific contexts, such as studies by Zhang (2015) in Australia and Japan, highlighted the importance of dividend policy in guiding corporate strategy and resource allocation. Baker et al. (2016) further emphasized the importance of precise record-keeping in formulating dividend policies. However, the generalizability of these findings is limited by differences in the economic, social, and political environments across different countries. It is, therefore, important to have localized research to address the contextual gaps.

The dividend policy debate has been widely discussed in international financial literature but the Ethiopian banking sector is underrepresented in the literature. Ethiopian banks operate under a specific regulatory system which establishes particular boundaries for their dividend payment practices. The National Bank of Ethiopia controls the maximum payout ratios which restrict banking institutions from paying dividends to their shareholders. The market for stocks in Ethiopia remains underdeveloped thus investors need dividends as their primary source of liquidity. The current situation makes dividend announcements more critical because investors rely on dividends for immediate returns instead of potential capital appreciation.

The existing research literature primarily relies on developed market studies while overlooking the regulatory environment of Ethiopia. The lack of research about Ethiopian banking sector dividend policies and their performance effects on Return on Assets (ROA) and Return on Equity (ROE) metrics results from this oversight. The present local studies present conflicting results which researchers have not examined properly. The research by Nebiyu and Tilahun (2013) established that banks with higher Dividend Payout Ratios (DPR) tend to perform worse because it limits their ability to reinvest funds. Neway (2019) discovered a positive link between Dividends per Share (DPS) and profitability because regular dividend payments boost investor trust. Alem Girmay (2022) discovered that DPR positively affected profitability although previous studies indicated different findings. Tesfaye (2017) discovered that dividends do not show a meaningful connection to performance which underscores the need for additional analysis of local factors.

The inconsistent findings demonstrate the requirement for specialized studies on how dividend policies affect Ethiopian institutions. Resolving these inconsistencies will provide better insights about how regulatory barriers and market restrictions shape dividend distribution plans and financial results within Ethiopian private banks. This research aims to address the information deficiency by using panel data from 2005 to 2024 to investigate the relationships between Dividend Payout Ratio (DPR), Dividends per Share (DPS) and key performance indicators such return on equity (ROE) to enhance knowledge about dividend policy in emerging markets.

The findings provide valuable insights for bank management, policymakers, investors, and other stakeholders in making decisions concerning dividend distribution strategies and their influence

on the financial health and performance of commercial banks in Ethiopia. The results expected to contribute to the existing body of knowledge on banking and dividend policy, particularly in the context of a developing economy.

1.3. Research Questions

In this research, there are four research questions to be addressed and these research questions are summarized and presented below.

- What are the signaling and trade-off effects of Dividend Payout Ratio (DPR) and Dividend per Share (DPS) on Return on Equity (ROE) in private commercial banks in Ethiopia?
- How do the findings of this study reconcile with the dividend irrelevance and relevance theories, and what implications do they have for our understanding of dividend policy?
- What is the average dividend payout in Ethiopian private banks?
- What kind of dividend payout policy do the banks follow?

1.4. Objective

The major objective of this study is to determine the relationship between dividend policy and financial performance private commercial banks', with a particular emphasis on the dividend payout ratio and dividend per share.

Specific objectives of the study include:

- ✓ To investigate how Dividend Payout Ratio (DPR) and Dividend per Share (DPS) affect Return on Equity (ROE) in private commercial banks operating in Ethiopia through signaling and trade-off mechanisms.
- ✓ To evaluates the study results against dividend irrelevance and relevance theories to determine their alignment or opposition to these theoretical frameworks.
- ✓ The research evaluates the typical dividend payout practices of Ethiopian commercial banks by showing their patterns
- ✓ The research examines dividend payout policies of particular private banks in Ethiopia

1.5. Significance of Study

This study examined the relationships between the components of dividend policy, like dividend payout ratio and dividend per share, each one's impact on the bank’s financial performance. The

results of this research are significantly important for bank executives and managers as they will be able to make better decisions regarding dividends that would meet the expectations of their shareholders and increase the value of the firm. Regulators, the National Bank of Ethiopia, were be able to gain from the research findings at once ensure that the banks are stable and that investors have confidence in the bank operation. This research was useful for academics and researchers to gain a more in-depth understanding of the dividend policy in the context of a developing economy.

In addition, this research contributes to the current knowledge on the role of dividend policy in the performance of private commercial banks in Ethiopia. It provides practical recommendations that help to promote high level financial management capability, shareholder value, and the development of the financial sector. This study is particularly relevant given the ongoing reforms and growth ambitions of the Ethiopian economy in which a sound banking system is essential. The findings of this study shape policies that aim to enhance corporate governance and financial stability in the banking sector. In addition, the study makes a contribution to the dividend policy literature in general, and in emerging markets in particular.

1.6. Scope of the Study

Main focus of the study is to examine the connection between dividend payout ratio/ dividend per share and financial performance, particularly for Ethiopian private commercial banks. There are 32 banks in Ethiopia that held licenses as of June 2024, which are the population of the subject of the study. However, the study was focused only on those ten (10) medium and small private commercial banks based on size and establishment period, according national bank report for which there is data that easily available for the period ranging between 2005 and 2024.

Table 1.1 Sample of Private commercial banks

No.	Bank Name	Year of Establishment
1	Awash Bank S.C	1994 G.C
2	Dashen Bank S.C	1995 G.C
3	Abyssinia Bank S.C	1996 G.C
4	Wegagen Bank S.C	1997 G.C
5	Hibret Bank S.C	1998 G.C
6	NIB Bank S.C	1999 G.C

7	Cooperative Bank of Oromia S.C	2005 G.C
8	Lion Bank S.C	2006 G.C
9	Oromia Bank S.C	2008 G.C
10	Zemen Bank S.C	2009 G.C

1.7. Limitations of the Study

It is clearly stated that the research focuses on how dividend payout ratio and dividend per share impact the financial performance of private banks in Ethiopia, which has some limitations that need to be carefully considered. The study solely focuses only the banking sector, which limits how broadly we can apply its findings to other types of financial institutions and business sectors. In addition, there are various variables that affect bank performance but only used dividend policy components could be taken as main factor for the purpose of this study. Furthermore, the study's lack of access to stock price in Ethiopia may limit a correct assessment of the dividend policies and their impact on the bank performance.

1.8. Definition of Terms

The following constructs were defined as they are used in this study for the sake of this investigation.

- **Dividend (DIV):** A corporation distributes a dividend to its stockholders, usually in the form of assets.
- **Earnings**: The amount of money made after interest and taxes are subtracted.
- **Earnings per Share (EPS):** A measure of a company's success, EPS is the percentage of profit allotted to each outstanding share of common stock. EPS stands for profit after taxes divided by the number of common shares, multiplied by 100.
- **Form of Dividend:** refers to the method by which a company distributes profits to its shareholders. Dividends can take various forms, and here are the most common types: Cash Dividend, Stock Dividend, Property Dividend, and so on
- **Corporate Taxation:** Corporate taxes are levied by the government against the earnings or profits of businesses. It is one of the government's main sources of income.
- **Firm Size (FS):** refers to the scale or magnitude of a company, which can be assessed using various metrics. It is an important concept in business and economics, influencing a firm's

operations, market power, and financial performance. Here are some common ways to measure firm size: Total Assets, Revenue, Market Share, Number of employees, and Geographical approach.

1.9. Organization of the Study

This research was organized into five chapters, which are arranged as follows: Chapter 1: Overview The broad background of the field of study and the rationale behind the research are covered in this subsection. This study comprise the background of the study, statement of the problem, research questions, objectives, scope, limitation of the study, significance of the study, definition of terms, and organizational study. Chapter 2: Literature Review: This chapter talks about the various literature related to the study. Here, emphasis is made on conceptual, theoretical, and empirical review and the literature gap. Chapter Three: Research Methodology: This is a crucial section of the study, where the techniques used to gather the data are acknowledged. These techniques include the procedures used to collect and analyze the data, as well as the presentation, analysis, and interpretation of the research activity. Chapter Four: Data presentation and analysis of findings: It entails the presentation and analysis of the data used and testing of the formulated hypothesis, and results and discussion. Chapter Five discusses the findings of the research in detail, the conclusion, and also makes recommendations and contributions to knowledge.

Chapter Two: Literature Review

2.1. Introduction

In this section, the concept of dividend and the theories and empirical findings on the relationship between dividend policy and bank performance is summarized and presented for easy understanding of the matter. When banks make financial decisions, dividend policy is a key factor that affects both their performance and how the market perceives them. It is the process of determining the amount and timing of cash dividend payments to the company's shareholders. In the banking industry, specifically among the private commercial banks, dividends are an important part of the financial plan that may affect the views of the investors, the stability of the market, and the overall financial results. This review of the literature examines the body of knowledge about the effect of dividend policies on commercial banks' performance. It covers the current knowledge on the topic, describe the context of dividend policy in the banking sector and reveal the research gaps that this study intends to address.

2.2. Dividend Policy and Its Types

Organizations use dividend policy to decide how much to reinvest in the business and how much to pay out as dividends to shareholders (Frankfurter, 1999). The rules and procedures that a business follows when determining whether to pay dividends to shareholders are known as its dividend policy (Nissim and Ziv, 2001). There are several types of dividend policies that companies may adopt each with its specific characteristics and implications for shareholders. Some of the major types of dividend policies include stable dividend, regular dividend, zero dividend, progressive dividend, residual dividend and hybrid dividends. Each of the types of dividend is discussed and explained below.

A. Stable Dividend Policy

The business keeps its payout ratio constant by paying a set percentage of its yearly revenues as dividends. A stable dividend policy involves paying consistent dividends regardless of earnings fluctuations. Companies maintain steady payouts to signal financial strength and attract investors seeking reliable income, adjusting dividends gradually if needed. Watson and Head (2010) argue

that dividend policy is inappropriate for companies with erratic profits whose shareholders demand a consistent dividend payment schedule.

B. Regular Dividend Policy

This policy provides consistent payouts, often quarterly or annually, appealing to investors seeking stable income. Businesses that follow this philosophy usually pay dividends annually, regardless of profit changes. The surplus profits are kept rather than paid out as dividends if the business has abnormally high profits (Brealey and Myers, 2003)

C. Progressive Dividend Policy

This approach involves gradually increasing dividend payments over time. Dhanani (2008) argues that Companies that adopt this policy aim to provide shareholders with a growing income stream, reflecting their commitment to returning value to investors as profits increase.

D. Zero Dividend Policy

Businesses that adhere to this strategy don't pay dividends at all. Rather, they put all of their profits back into the company to help it develop and expand according to Frankfurt and Wood (2002). This is typical of high-growth businesses that put capital expansion ahead of shareholders' immediate profits.

E. Residual Dividend Policy

According to this strategy, dividends are only disbursed following the funding of all lucrative investment opportunities. As a result, dividends are regarded as residual, which means they are only paid out if earnings are still available after working capital requirements and capital expenditures have been satisfied. (Lintner, 1956). This strategy may cause dividend payments to fluctuate significantly.

F. Hybrid Dividend Policy

A hybrid policy combines the elements of several dividend policies. For example, a company may pay a regular basic dividend and additional distributions based on exceptional revenues or one-time gains. (Baker, and Powell, 2000). This finds a middle ground between the potential for increased profitability and predictability.

2.3. Forms of Dividend

A distribution of assets to stockholders in proportion to the number of shares of capital stock held is the standard definition of a dividend. Cash or another asset may be used to disperse the assets. Companies may issue shares of their common stockholders as stock dividends as an alternative to distributing dividends in the form of assets. The most common type of dividend is in the form of cash. Share companies usually pay regular cash dividends, and sometimes firms will pay an extra cash dividend in addition to the regular one (Ross, *et al*, 2002). Many corporations distribute stock dividends to their shareholders. Mosich (1989) defined a stock dividend is a distribution of additional shares of capital stock called dividend shares, to stockholders in proportion to their existing holdings. It is not a true dividend, because no cash leaves the firm, added Mosich.

Companies routinely announce stock dividends in addition to cash payments (Brealy and Myers 2000). Brealy and Myer (2000) argue that a stock split and a stock dividend are quite similar. Both raise the number of shares, but they do not affect the company's assets, earnings, or overall worth, which lowers the value per share. The difference is that a split lowers the par value of each share, whereas a stock dividend transfers retained earnings to equity capital. Nwude (2003) pointed out that, there are five types of dividends that payout. These consist of cash dividends, stock dividends or bonus issues, stock or share splits, reverse stock splits, and stock repurchases. Some literatures are stated six forms of dividend.

2.4. Determinants of Dividend Policy

Several factors that influence dividend payout decisions in private banks. Some of the factors that affect dividend decision is summarized and presented below.

Profitability: It has long been believed that a company's ability to pay dividends is mostly determined by its corporate profitability. Baker and Powell (2001) argued that a company's dividend payment pattern is impacted by the dividends paid out in prior years and the earnings for the current year.

Cash Flow: A company's cash flow situation has a significant impact on dividend payments. Due to a lack of funds, a low liquidity situation results in a less generous payout. Cash flows, which show the company's capacity to pay dividends, have a greater impact on dividend payments than current earnings, which are less affected by accounting

procedures. A position link between cash flow and dividend distribution policy was discovered by Amidu and Abor (2006). In addition, Yidersal (2009) argued that cash flow is a determinant of dividend policy on private banks.

Debt to equity Level: The debt-to-equity ratio of the company is taken into account because larger debt levels may make it more difficult to pay dividends. Sustaining financial stability requires a precise balance between debt and equity. This ratio is sometimes referred to as leverage, risk, or gearing. Chehab (2005) examined companies with high growth rates and dividend payouts use debt financing, as do companies with significant leverage relative to their industry. However, he discovered contradictory result about the connection between leverage and dividend payout ratios.

Sales growth: Dividend payments may be impacted by sales growth. According to Amidu and Abor (2006), a company's investment and finance decisions are made before its dividend payment levels are finalized; rather, the dividend decisions are made concurrently with these decisions. They point out that investment philosophy has no bearing on the firm's use of target payouts, its reasons for paying dividends, or the degree to which dividends are decided. They also show a direct link between growth and the financing needs of a firm.

Retained earnings: Companies often prefer to retain earnings for reinvestment in growth opportunities. A high level of retained earnings might indicate less likelihood of paying dividends.

Tax Consideration: Dividends may be taxed at different rates than capital gains, and tax concerns can impact on dividend policy, influencing both business decisions and investor preferences. Investors need and secure higher projected returns on shares in dividend-paying stocks, according to tax-adjusted models. Modigliani (1982) argued that changes in portfolio composition are caused by the clientele effect. The tax-adjusted model assumes that investors will maximize their post-tax income. Farrar and Selwyn concluded in 1967 that, under a partial equilibrium framework, individual investors decide how much personal and corporate leverage they want to have and whether to earn dividends or capital gains from corporate distributions. Amidu and Abor (2006) recently discovered a favorable correlation between dividend payments and taxes.

Shareholders' expectations: Shareholder preferences can influence dividend policies. Some investors prefer immediate returns in the form of dividends, while others may favor growth.

Legal and regulatory framework: - Banks' overall dividend policy may be impacted by legal limitations or regulatory requirements that specify the circumstances in which dividends may be paid.

2.5. Dividend Policy and Performance

It is widely acknowledged that the dividend policy is a crucial financial choice for management (Walter, 1963). The goal of financial management is to maximize the firm's share value while deciding on the dividend policy, and hence management must take into account how much the policy will affect the share price. Every choice a corporation makes has an impact on its finances, and every choice that affects a company's finances is a corporate finance decision. It is important for financial manager to consider the three primary financial decisions, which are investment decisions, finance decisions, and profit distribution or dividend decisions (Giang and Tuan, 2016).

Bank investments impact the cost of capital and future earnings and possible dividends (Foong, Zakaria, and Tan, 2007). Several hypotheses explain the significance of dividend policy but there is no consensus on it influences of firm value (Yegon and Sang, (2014), Samuel, 2017, Yamson, 2018, and Adimasu, 2019). Khan et al. (2016) pointed out that several methods are employed to gauge financial performance. A company's market share, total units sold, and revenue from operations can be used as performance indicators. Profit after taxes, return on equity, return on assets, return on investments, earnings per share, and other financial metrics can all be used for measurement.

2.6. Bank-Specific dividend Policy dynamics

The banking sector influences dividend policies through unique elements that include regulatory requirements as well as capital structure and risk management practices. Banks operate under strict capital adequacy rules which determine their capacity to distribute dividends according to NBE (2024). The banking regulations require institutions to hold enough capital reserves for loss absorption which restricts their dividend payment capabilities (Brealey et al., 2008).

The banking operations' nature which depends on customer deposits and high leverage affects how banks develop their dividend strategies. Banks allocate their earnings toward loan expansion and liquidity maintenance instead of dividend distribution (Amidu & Abor, 2006). The decision between shareholder dividend payments and growth investments remains vital because high dividend distributions threaten financial stability, according to Jensen and Meckling (1976).

The signaling power of dividends in banking becomes especially strong because regular dividend payments help investors perceive future earnings stability (Lintner, 1956). The performance assessment of private commercial banks in Ethiopia requires knowledge of these dynamics because they need to strike a balance between shareholder returns and operational resilience. The specific dividend policy dynamics of banks show how regulatory frameworks and capital adequacy requirements interact with growth needs to demand customized dividend strategies in banking (Black, 1976).

2.7. Theoretical Literature

2.7.1. Dividend Irrelevance Theory

Merton Miller and Franco Modigliani (M and M) (1961) proposed the dividend irrelevance argument, which contends that a company's dividend policy is meaningless. M and M specifically argued that the dividend policy impacts neither the cost of capital nor the stock price. The dividend irrelevance theory will hold in a perfect world with infinitely divisible shares, no brokerage costs, and no taxes.

This means a stockholder dissatisfied with the dividend payout policy might make their dividend. That is, the investor can purchase or sell firm stock if they are dissatisfied with the dividend amount. The theory argued that a company's dividend policy in a perfect capital market is unaffected by its value and whether it pays out big or low dividends. They maintained that only the firm's fundamental earning capacity and business risk define its worth. M and M maintained that the firm's worth is solely determined by its income not by the distribution of income between retained earnings and dividends (Miller and Modigliani, 1961). Ross, Westerfield, and Jaffe (2002) used three criteria to describe a perfect capital market.

- ✓ **No transaction Costs:** No brokerage fees, taxes, or other transaction costs are associated with purchasing or selling assets in a perfect capital market. As a result, there are no financial restrictions on investors' ability to trade.
- ✓ **Homogeneous Expectations:** Every investor has the same expectations for the risks and returns that will come with securities in the future. This consistency guarantees that all investors base their choices on the same data and evaluations.
- ✓ **Perfect Information:** Every investor has simultaneous, unrestricted access to all pertinent stock information. No investor has an edge over others in terms of access to market data since there are no information asymmetries.

In most cases, these standards can be used, and contribute to the development of an atmosphere in which securities are priced effectively and where risk and return are the only factors considered when making investments.

2.7.2. Dividend Relevance Theory

The Miller and Modigliani thesis that dividends are immaterial was rejected since there was no such thing as a flawless financial market and the real-world market is flawed, therefore the firm's payout decision affects its worth. To demonstrate how dividend policies impact the firm's value, researchers created many theories and models following this conclusion. The following sections discuss a few of these theories: the Bird-Hand theory by Gordon and Walter (1963), the tax preference theory by Brennan (1970), the agency theory by Jensen and Meckling (1976), the signaling theory by Linter (1956), and the transaction cost and residual theory by Mueller (1967).

2.7.3. Signaling Theory

It is another argument that indicate the existence of asymmetric knowledge between insiders (managers and directors) and outsiders (shareholders) is another reason why M and M's dividend irrelevance theory is insufficient to explain financial market behavior. M and M assumed that managers and external investors have unlimited, equal, and immediate access to the same data about a company's performance and future. However, the managers who oversee the company typically have access to knowledge about its prospects, both present and future, that a third party does not. The market may be unable to determine the firm's genuine intrinsic value due to this informational divide between insiders and outsiders. In that case, the share price might not

necessarily a reliable indicator of the firm's worth. To bridge this gap, managers might have to impart their knowledge to external parties to comprehend better the company's true worth (Al-Malkawi et al. 2010). Lintner's (1956) research found that a company's stock price typically fluctuates in tandem with changes in dividend payments, served as the foundation for the signaling theory of dividends.

In signaling theory, managers usually know more about the firm's asset values than external agents do. As a result, managers use dividend changes to update shareholders on the company's financial status. The data can be indicative of the company's short- or long-term strategies (Ross, 1977). By lowering the dividends they would pay shareholders in 2020, corporations are communicating their pessimism to both present and potential investors, according to the dividend signaling hypothesis, which explains this phenomenon (Michael, 2019). Therefore, the theory suggests that although lower dividend payouts indicate to investors that management is pessimistic about a company's future growth prospects, greater dividend payouts indicate management optimism about a firm's prospects (Aduda and Ongoro, 2020).

2.7.4. The “Bird -in - hand” Theory

Gordon proposed the bird-in-hand theory in 1956. According to him, dividends that are due shortly have a higher discounted value than payouts due in the far future. Its foundation is the adage "A bird in the hand is worth more than two in the bush." The theory's financial expression is that investors are more inclined to purchase stocks that pay dividends now than to purchase stocks that hold onto earnings and do so later. This is because there is a lot of uncertainty around future dividends and capital gains (Al-Malkawi et al. 2010) and (Gustav and Gairatjon, 2012).

Dividends are valued differently than retained earnings (or capital gains) in a world of uncertainty and incomplete knowledge. A high payout ratio will lower the cost of capital and hence raise share value since a bigger current dividend lessens uncertainty about future cash flows (Al-Malkawi et al. 2010). Additionally, rating agencies give a company a higher rating when it announces dividend payments than when it doesn't. A higher rating will make it easier for the company to raise financing from the capital markets since credit institutions will be more inclined to lend money to the company because dividend payments demonstrate that the company can meet its obligation.

Moreover, the company may occasionally be eligible for improved facilities and favorable borrowing rates (Kinfe, 2011). The primary justifications offered by Lintner (1956) for the bird in hand theory are the majority of businesses use cautious financing practices, and as a result, dividend payments are determined by an ideal payout ratio. Changes in the company's profit are the main cause of departures from the ideal payout ratio; if the profit rises, the dividend distribution ought to rise proportionately as well. However, the company's payouts are also impacted by uncertainties about future profits. The business may reduce the dividend payout ratio if the projected risk for the future is greater than the present risk.

2.7.5. Agency Theory

In their theory, Jensen and Meckling (1976) observed that the possible conflict between bondholders and shareholders is one of the organizational expenses that may be influenced by profit arrangement. It is believed that bondholders' assets are best understood by their shareholders. In this case, large profit payments to shareholders could be interpreted as bondholders' wealth being disposed of by shareholders. Bondholders wish to impose restrictions on profit payments to protect their positions because shareholders have limited obligations and have access to the company's income before bondholders do.

Easterbrook (1984) argued that profits reduce the problem of excessive speculation since they increase the frequency with which businesses must value advertisements to raise further funds. Businesses expose themselves to the checking and restraining of these business sectors when they are bringing in new value. Jensen (1986) argued that companies with a lot of free income give directors more freedom to use the assets in ways that benefit them rather than the shareholders. In this way, profit installments can be beneficial for the shareholders, with the ultimate goal of preventing administrators from engaging in ventures with a negative net present value and controlling the problem of excessive speculation.

2.7.6. Tax Preference Theory

Farrar and Selwyn (1967) assumed that investors maximized their post-tax income. Two options are available to investors in a partial equilibrium framework. The amount of dividends or capital gains distributed to individuals and corporations is up to them. They reasoned that investors would prefer the corporation to keep its earnings if an effective marginal tax rate was paid on dividend

income, as a shareholder would benefit more from zero dividends. Litzenberger and Ramaswamy (1979) argued that financial experts require businesses to retain earnings to provide returns as lower-burdened capital picks up rather than heavily saddled profits. As a result, a low-profit payout ratio lowers the needed rate of return and raises the association's share price on the market.

Brennan (1970), on the other hand, extended the Farrar and Selwyn's results by considering how the prices of stocks might be affected by different dividend policies. He believed that regardless of a company's dividend policy, stock market prices would fluctuate so that stockholders would always receive the same after-tax rate of return. According to Brennan's model, even if the corporation changes its dividend policy, purchasers and sellers of the stock would still need the same after-tax return from the shares. This implies that a company's stock would have a lower price to retain the same after-tax return that shareholders need if it adopted a high dividend distribution policy and shareholders were forced to pay more taxes as a result.

2.7.7. Clientele Effect Theory

Certain market inefficiencies, such as transaction costs and differential tax rates, may impact individual investors' portfolio decisions, leading them to favor distinct combinations of dividends and capital gains. According to M and M, these flaws could lead investors to select assets that lower these expenses. The phrase "dividend clientele effect" was coined by M and M to describe investors' propensity to be drawn to a certain class of dividend-paying securities. When deciding whether to purchase shares with high dividends or those with low dividends, investors' investing objectives and demographic characteristics are important considerations. Assuming that investors have a portfolio of investments, these investments are geared toward achieving their objectives, which may include income production, capital preservation, or rapid development. Al-Malkawi et al. (2010) examined that the investor's age, family size, educational costs, career, employment package, and other attributes all influence these objectives. He argues that the clientele effect was divided into two categories, transaction-induced clientele effect and tax-induced clientele effect.

2.8. Empirical Literature Review

Dividend policy has been identified as one of the issues in financial economics. Even though many researchers have tried to explain the problems in dividend dynamics and the determinants of dividend policy, it is impossible to rationalize the actual dividend behavior of firms (Black, 1976;

Brealey and Myers 2005). The relationship between dividend policy and firm performance was investigated in different countries by different researchers. According to the Bird-in-the-Hand framework, investors are more likely to prefer cash dividends than uncertain capital gains in the future. This desire may lead to a higher valuation of banks that declare dividends regularly in the context of Africa. Since investors may be more interested in the immediate profit in a developing financial system, this idea is particularly significant to Ethiopian private banks.

2.8.1. Empirical Results – Global Context

Previous studies have shifted the focus to control variables such as business size, leverage, age and liquidity to understand the relationship between dividend policy and performance. Israeli and Bein (2017) in Nigeria investigated the dividend payout ratio and the financial performance of Nigerian deposit money banks over the period 2009-2014. The sample included fifteen banks listed on the Nigerian Stock Exchange and the analysis was done using panel data regression, specifically the Pooled Least Squares estimation technique. They found that there is a positive correlation between dividend payout ratio and performance. On the other hand, there is a weak and negative relationship between profitability and dividend yield.

Solomon (2017) conducted a study in Nigeria and explored the effect of dividend policy on the corporate performance of the banking and petroleum industry over the period 2000-2016. He found out that business size and dividend per share (DPS) positive impact in addition dividend payout ratio (DPR) has negative impact on Nigeria's banking industry performance. However, the study found that there is no significant impact of Earnings per share (EPS) on the banking sector's performance. On the other hand, both DPS and company size have positive impacts on performance in the petroleum industry. Ibrahim, Umar, and Faiza (2022) conduct a study and identified the effects of dividend policies on the financial performance of D-SIBs in Nigeria are different. Specifically, profitability is affected by the dividend payout ratio (DPR) positively and the retention ratio (RR) negatively. Also, the analysis results show that the effect of dividend policy on profitability is not constant and each bank has a different effect. Furthermore, there is no significant relationship between dividend policy and profitability in the long run. Therefore, the results present the various ways in which dividend policy impacts financial performance and

suggest that policymakers and financial analysts should consider these complexities when devising their strategies.

Kioko (2017) assessed the effect of dividend policy on the financial performance of the companies listed at the Nairobi Security Exchange (NSE) using casual research design and found that dividend policy has significant effect on the financial performance of the listed firms. However, the study used limited period data, which is its limitation. Wafula (2016) examined the effect of dividend policy on financial performance of firms listed at the NSE. In this study multiple regression is used and the study revealed that dividend policy has no effect on the financial performance the firms included in the study.

Agyei and Yiadom (2010) argued that banks that declared dividends were more profitable, which supports the idea that dividends are an indication of good financial health. Samuel (2018) revealed that there is a high correlation between dividend payout policies and the performance of rural banks in Ghana. Based on the findings, 85.7% of the shareholders agreed that the declaration of dividends led to an increase in share prices. This was a substantial number of shareholders. In addition, banks that paid lower dividends often retained their profits to finance expansion and liquidity. Similar patterns have been observed in Nigerian research, which has also established a very high positive correlation between the financial performance of deposit money banks and the rate of dividend payment. Based on these results, it can be recommended that banks should retain a good dividend policy to enhance the company's performance and the investors' confidence.

Black and Scholes (1974) investigated how dividends affect stock prices and the preferences of investors while analyzing equities on the New York Stock Exchange (NYSE) based on dividend yield and risk. The comparison of the situations also helped to reveal how the contextual factors can influence the effect of the dividend policy. A study done on the Nairobi Securities Exchange for instance, Ngang (2016) opined that companies' financial performance was influenced by several dividend policy variables including dividend payout ratio, dividend payment method, dividend payment time and dividend per share. This highlights the need to consider the dividend-performance link in its entirety.

2.8.2. Empirical Results - In Ethiopia

Nebiyu and Tilahun (2013) investigated the relationship between dividend policy and bank performance in private commercial banks in the Ethiopian context. The research design involved panel data from the financial statements of six private commercial banks over a period of eight years (2005-2012) and the Pooled Ordinary Least Squares (OLS) regression model was used to conduct empirical analysis. There is a negative statistically significant relationship between dividend payout and bank performance. Specifically, poorer performance as measured by return on equity (ROE) was linked to higher dividend payments. The investigation revealed that credit risk has a negative and significant impact on the performance of the bank. However, it was found that other factors like asset growth and bank age had no measurable effect on performance.

Adimasu (2019) explored the effect of dividend policy on the performance of insurance companies, and the study's findings revealed a positive and significant relationship between dividend payout and the profitability of Ethiopian private insurance companies, as measured by return on assets (ROA), over the period from 2006 to 2015. It was also established that these insurance companies' dividend payout increases by 81% when profitability increases by one unit, all other factors being equal. This finding is consistent with the Bird-in-the-Hand theory, which states that investors prefer cash dividends to potential capital gains. The empirical studies presented in this paper support the notion that dividend policy has a significant impact on the financial performance of banks.

Zelalem and Abebe (2021) analyzed the impact of balance sheet and income statement on the cash dividends of private commercial banks in Ethiopia. In this study independent variables such as liquidity, asset size, leverage, and growth, which are components of the balance sheet, and profitability, which is a component of income statement are used for the period 2010–2020. In order to determine the most important dividend decisions variables the generalized method of moments (GMM) was used in the study. Results of the study shows that profitability, size, and liquidity are statistically significant and positively influence the dividend policy of Dashen bank, Wegagen bank, Hibret bank, Lion international bank, Cooperative bank of Oromia, Awash international bank, Bank of Abyssinia, and Nib international bank. On the other hand, growth and leverage have a negative and significant impact on the dividend policy of private commercial

banks. This shows that dividend policy of the Ethiopian private commercial banks is influenced by both the balance sheet and the income accounts.

Alem Girmay (2022) investigated the factors determining dividend pay-out policy of 12 Ethiopian private commercial banks using ten (10) years data. In this study, dividend pay-out ratio was used as dependent variable and profitability, liquidity, leverage, firm growth, firm size, lagged dividend pay-out, inflation and GDP growth were used as independent variables. Randum effect panel regression technique was used. The regression result revealed that profitability, liquidity, leverage, lagged dividend pay-out and firm size have positive significant effect on dividend pay-out ratio. Whereas, firm growth, inflation and GDP were found to be statistically insignificant and have no any impact on dividend policy of Ethiopian private banks. On the basis of the results, the study recommended that investor who prefers current high dividend should invest on profitable company, while management should announce the dividend after considering their profit, investor should invest on larger company to earn higher dividend.

Demile (2016) assessed the determinants of dividend payout ratio in Ethiopia from the period 2009-2014. In this study, only bank specific variables are employed as independent variable. The study concluded that lagged dividend, size and growth have positive and significant effect on the dividend payout ratio whereas profitability and leverage have negative effect on dividend payout ratio but the remaining variable which is liquidity do not have significant relation with dividend payout ratio.

Tesfaye (2017) examined determinants of dividend payment policy using both bank specific and macroeconomic variables. Profit, leverage, liquidity, retain earing, loan loss provision, growth rate and lagged dividend and inflation were used in the study. The study found that except retain earning, loan loss provision and inflation other variables have positive and significant relation with dividend payout ratio. However, liquidity and growth rate have significant negative relation with dividend payment police.

Tesmsgen and Venkatip (2016) investigated the determinant of dividend payout ratio of Ethiopian corporate private share company from 2001-2012. The result of the study indicated that earning per share, liquidity, age, and tax have a positive and significant effect on the dividend payout ratio

whereas lagged dividend, and growth, size, and profitability have an insignificant relationship with the dividend payout ratio.

Studies made in Ethiopia and abroad showed inconsistent relationship between dividend policy and performance of commercial banks. In order to properly define the relationship between these two variables, it is necessary to conduct further research so as to enhance the understanding of players of the industry in the area. It also helps Ethiopian private banks to develop a proper dividend policy that depends on the investor's perceptions and the actual financial situation. It is thus necessary to conduct more research on the effects of dividend policy in the dynamically changing environment of the Ethiopian banking sector.

Table 2.1. Synthesis table of Global and Ethiopian empirical findings

Author Name and Year	**Country**	**Period**	**Variables**	**Key Findings**	**Theoretical framework**
Amidu and Abor (2006)	Ghana	2000-2004	DPR, ROA, ROE	Positive correlation between dividend policy and profitability indicators	Agency Theory
Agyie & Yiadom (2010)	Ghana	2000-2009	DPR, ROA, ROE	Banks declare dividends, shower higher profitability, indicating good financial health	Signaling Theory
Nissim & Ziv (2015)	Global	-	DPR, Earnings	Changes in earnings drive changes in dividends across multiple countries.	Dividend Relevance Theory
Ngang (2016)	Kenya	2007 – 2015	DPR, ROE, DPS	Dividend Policy has significant relationship with financial performance	Agency Theory and Tax preference
Kioko (2017)	Kenya	2000-2015	DPR, ROA, ROE	Dividend policies vary significantly on the financial performance of listed firms	Contextual Factors

Israel & Bein (2018)	Nigeria	2009-2014	DPR, ROA	Positive correlation between dividend payout and bank performance	Risk Management Theory
Solomon (2019)	Nigeria	2000-2016	DPR, ROA, ROE, Bank Size	Dividend Payout ratio negatively impacts bank performance; larger firms show firm profitability.	Market Efficiency
Nebiyu & Tilahun (2013)	Ethiopia	2005-2012	DPR, ROA, Credit Risk	Negative Impact of Dividend Payout Ratio (DPR) on Bank Performance	Agency Theory
Tesfaye (2017)	Ethiopia	2009-2014	DPR, Profit, Leverage, Growth	Banks prioritize reinvestment over dividends due to regulatory pressures.	Regulatory Framework
Adimasu (2019)	Ethiopia	2006-2015	DPR, ROE	Positive relationship between dividend payouts and profitability in insurance firms.	Dividend Relevance Theory
Zelalem & Abebe (2021)	Ethiopia	2010-2020	DPR, ROE, Size, Liquidity, Leverage	Profitability, size, and liquidity positively influence dividend policy; growth and leverage negatively impact it.	Economic Conditions
Alem Girmay (2022)	Ethiopia	2005-2022	DPR, ROA, ROE, Bank Size	Profitability, liquidity, and size show a significant positive effects on dividend payout ratio.	Signaling and Agency Theories

2.9. Conceptual Framework

The purpose of the conceptual framework is to classify and explain concepts that are relevant to the study and to depict the relationships between them. Such a framework is useful for the researcher to delimit the concept, chart the research terrain or the conceptual scope, structure relationships between concepts, and reveal gaps in the literature (Creswell, 2003). The conceptual framework for impact of dividend payout ratio and dividend per share on the performance of private banks in Ethiopia is based on key concepts of the study and several literatures.

ROE measures performance of private banks and these variable is affected by several factors. Some of the variables that hypothesized affect the dependent variable include independent variables such as dividend payout ratio and dividend per share. This study focuses on dividend policy, which is measured by DPR and DPS. In addition, control variables such as Size, Leverage, GDP and Inflation used to ensure that the observed effects are more accurately attributed to the independent variables. The connection between these variables depends on both theoretical perspectives and empirical evidence. To analyze the effect of dividend payout ratio and dividend per share on the ROE of private commercial banks in Ethiopia, one has to consider these relationships while controlling external influences.

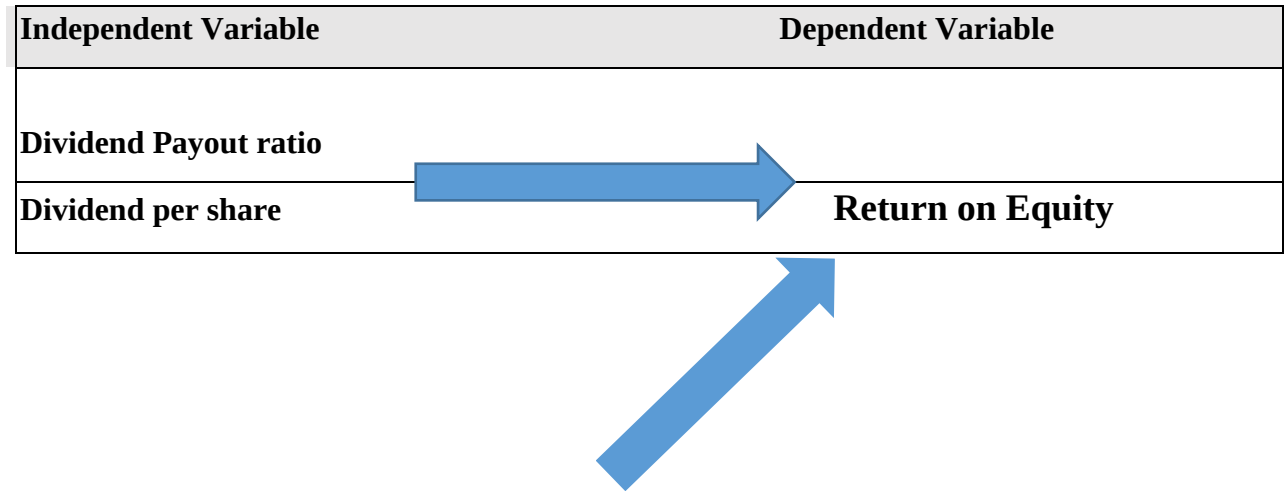
According to Signaling Theory management signals its confidence in future earnings by maintaining or increasing the Dividend per Share (DPS). The banking industry needs this signaling effect to shape how investors view stock performance. Through strategic management of DPS banks can convey their financial condition to shareholders which results in better market value and increased investment.

According to agency theory exist fundamental disagreements about interests between shareholders and management. The Dividend Payout Ratio (DPR) functions as an essential instrument to address agency conflicts in this context. The establishment of a definitive DPR helps banks control the amount of available cash that management could potentially misuse for unprofitable investments. The interest alignment created by this approach provides owners with equitable returns while managers receive rewards for decisions that benefit shareholders.

According to trade-off theory banks must perform a financial balance between dividend payments and maintaining earnings reserves for both growth needs and regulatory requirements. According to this theory banks determine their DPR by balancing immediate dividend payments against future financial stability. The identification of this trade-off enables banks to create financial strategies which maximize performance through regulatory compliance.

Economic conditions strongly affect dividend policies through GDP growth and other similar factors. Banks generate increased profitability during times of strong economic growth so they can pay out more dividends. The relationship shows that positive external economic indicators drive banking institutions to enhance shareholder dividends through their strategic responses.

Figure 1. Conceptual framework diagram



Chapter Three: Research Methodology

3.1. Introduction

The section focuses on the methodology of the study and identifies how to examine the connection between dividends and the financial performance of private commercial banks in Ethiopia. The research approach, design, population, sample, data collection methods, and data analysis techniques are the main components of this chapter. It also identifies the method to be used to analyze the relationship between the dividend policy of private commercial banks in Ethiopia and financial performance, so as to draw the proper conclusion.

3.2. Research Approach and Design

This research explored the effect of dividend policy on the performance of private commercial banks in Ethiopia using a quantitative approach. The research utilizes a quantitative approach. This method works well for examining the quantitative connections between dividend policies and different banks' performance indicators, enabling researchers to assess particular theories about how dividend policies impact Ethiopian private commercial banks' financial performance. Klopper (2008) argues that research design is a design that a researcher uses to conduct research. This study uses a quantitative research design, which is suitable for analyzing the relationships between dividend policy and bank performance metrics. Creswell (2014) argued that quantitative research assesses the collection of numerical data using statistical techniques, which makes it easier to evaluate the effects of dividend policies on the financial performance of Ethiopia's private commercial banks.

3.3. Population and Sample

The population of this study consists of 32 commercial banks in Ethiopia that held licenses as of June 2024. However, the study included 10 of these commercial banks, which have reliable data for the analysis, focusing on the period from 2005 to 2024. The research employs purposive sampling because it requires studying private commercial banks which maintain consistent dividend payment records and reliable financial information. The research method enables researchers to study banks that demonstrate typical sector characteristics. The research selects ten medium and small private banks according to their size and establishment period and data

availability to generate findings that apply to the entire Ethiopian private banking sector comprehensive data regarding dividend and financial performance metrics based on national bank of Financial Stability report. In addition, other criteria are prioritizing banks with stable operations and a history of dividend payments, allowing for a thorough analysis of the relationship between dividend policy and performance.

3.4. Data Sources, Data Type, and Variables of the Study

This study relies on secondary data sources, which include annual reports of the private commercial banks in Ethiopia, the National Bank of Ethiopia, IMF, and World Bank reports. Quantitative data was collected from available public documents such as financial statements, annual reports, and other relevant financial literature of the selected banks for the period from 2005 G.C to 2024 G.C. This process ensures the use of consistent and accurate data for analysis. In this research, ROE can be a dependent variable, and dividend payout and dividend per share is the main independent (explanatory) variables. In addition, Bank Size, Leverage, GDP and inflation, are control variables that are used to capture their influence on the explanatory variable. Individual variables that are used in the study and their expected relationship is presented in the table below.

Table 3.1. Summary of the Variables employed in the Study

Variables	Measurement	Description	Expected Sign	Actual Result
Dependent Variables				
ROE	Net income / Total equity	Return on Equity	NA	
Independent Variables				
DPR	Total Dividend/Net Income	Dividend Payout Ratio	+	-
DPS	Total Dividend/No. of Outstanding Share	Dividend Per Share	-	+
SIZ	Natural Logarithm of Total Asset	Bank Size	+	-
LV	Total Debt / Total Asset	Leverage	-	+
RGDP	Real GDP Growth	GDP Growth	+	+
INF	Consumer price index	Inflation	+/-	-

Source: Researcher

In this study, the variables that was used are defined and their expected relationship is shown below for further use in the analysis. The relationship between these variables is based on theoretical frameworks and empirical evidence. Research has demonstrated that banks that maintain stable or rising dividend policies tend to achieve better performance indicators such as ROE and ROA because it demonstrates their confidence about future earnings. The analysis of variable interactions shows that a properly designed dividend policy leads to better bank performance and market valuation but regulatory requirements create additional complexities for dividend-related decisions. The relationships between these factors need to be understood by stakeholders who want to effectively manage within the commercial banking industry. Additional quantitative research that studies banking sectors alongside market environments delivers more detailed understanding of these dynamics.

A. Dependent Variables

- **Return on Asset (ROA): It** is a financial ratio that indicates how profitable a company is relative to its total assets. This ratio indicates how well a company is performing by comparing the profit (net income) to the capital it invested in assets.

  ROA=Net Income/ Total Asset

- **Return on Equity (ROE):** This is the percentage of shareholders' equity that is returned as net income. By showing how much profit a business makes off of the capital invested by shareholders, it gauges corporate profitability.

  ROE= Net Income/ Shareholder Equity

B. Independent Variables

- **Dividend per Share (DPS):** It shows how much a company pays out as dividend for each outstanding share during a specific period.
- **Dividend Payout Ratio (DPR):** This is an accounting ratio used to assess how many dividends are distributed for each share of stock. It is computed as the percentage of net income that is given to shareholders as dividends.

  DPR = Total Dividends/Net Income
- **Leverag**e: The level of debt to equity can be a determinant of a bank's ability to pay dividends. High level of leverage may reduce the amount available for distribution as

dividends after meeting the debt obligation, which in turn affects the ROE and ROA respectively.

- **Inflation:** It is a consumer price index that affects the profitability of commercial banks and their ability to pay dividends.
- **GDP Growth**: It is the general economic condition as represented by the GDP growth rates, which is likely to affect the performance of the banking sector, the profitability, and therefore the dividend declaration capability.

3.5. Data Analysis Plan

The data analysis plan for the study on the impact of dividend policy on the performance of commercial banks in Ethiopia encompasses several key statistical and diagnostic tests to ensure robust findings. Stata software is used for data analysis. Initially, descriptive statistics were summarizing the main characteristics of the dataset by calculating means, medians, standard deviations, and ranges for continuous variables like return on equity (ROE), return on assets (ROA), and dividend payout ratios, along with frequency distributions for variables. In addition, a regression analysis will be made to identify the relationship between dividend payout and the financial performance of ten private commercial banks.

3.5.1. Unit Root and Stationarity Test

Data will be tested for the presence of unit roots. Panel root test like the Levin-Lin-Chu (LLC) test, Im–Pesaran–Shin (IPS) and Fisher tests are used to determine if a panel data series has a unit root, indicating non-stationarity, which is important for accurate information. It is necessary to avert spurious outcomes. Spurious regression leads to fallacious results when the factors of regression lack constant means and variance (Gujarati 2003). Although panel unit root tests are usually undertaken to determine the stationarity properties of variables in econometrics. In order to assess the panel unit root tests and identify the stationarity of the series, the study applied the model specified below.

$$\Delta Y_{it} = \alpha_i + \delta Y_{i,t-1} + \sum_{j=1}^{n} \rho_i \Delta Y_{i,t-q} + z_t^i \gamma + u_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where Δ is the first difference operator (Y) in the series of observations for banks i for t=1 …, n periods. The panel unit root test has the following null hypothesis H_0: $\delta_i = \delta = 0$ for all i, which presumes that all series are stationary.

3.6. Econometric Model Specification

In this study econometric regression model is used to estimate and analyze the relationship between dividend policy and the performance of the private commercial banks. The following regression model is used in this study to examine the empirical impact of dividend policy on the performance of ten private commercial banks in Ethiopia.

$$\boldsymbol{Financial\ Performance(FP)} = \int(DPR, DPS, SIZE, LEV, INF, GDP)$$

Model One: In this model, the relationship between dividend policy and the performance of commercial banks is analyzed by including industry variables in addition to bank-specific variables in the model and observing the impact of these variables on the stated relationship. It is expressed as follows:

$$\boldsymbol{ROAit} = \beta 0 + \beta 1(DPR\ it) + \beta 2(DPS\ it) + \beta 3(LEV\ it) + +\beta 4(SIZ\ it) + eit$$

$$\boldsymbol{ROEit} = \beta 0 + \beta 1(DPR\ it) + \beta 2(DPS\ it) + \beta 3(LEV\ it) + \beta 4(SIZ\ it) + eit$$

Model Two: In this model, the relationship between dividend policy and the performance of the banking sector is analyzed by including macroeconomic variables such as inflation and GDP in addition to bank-specific variables, to have a broader view of the model. It is expressed as:

$$\boldsymbol{ROAit} = \beta 0 + \beta 1(DPR\ it) + \beta 2(DPS\ it) + \beta 3(LV\ it) + \beta 4(SIZ\ it) + \beta 5(INF\ it) + \beta 6(GDP\ it) + eit$$

$$\boldsymbol{ROEit} = \beta 0 + \beta 1(DPR\ it) + \beta 2(DPS\ it) + \beta 3(LV\ it) + \beta 4(SIZ\ it) + \beta 5(INF\ it) + \beta 6(GDP\ it) + eit$$

Where:

ROA - Return on Asset, **ROE** - Return on equity, **β0** - Constant coefficient, **DPR** – Dividend Payout ratio, **DPS** – Dividend Per Share, **SIZ** - Bank size, **LV** – Leverage of the bank, **INF** - Inflation rate, **GDP** - Gross domestic product, **i** - no of private commercial banks (10), **t** - period from 2005 – 2024, $\mathbf{e}^{it}$ - Error term.

3.6.1. Estimation techniques

The research employs various estimation approaches to process data accurately and obtain reliable findings. The main estimation method in this study, Generalized Least Squares (GLS), becomes necessary when error terms show heteroskedasticity or autocorrelation because it produces more efficient and unbiased estimates through error covariance structure modeling. Multiple Regression Analysis serves as the appropriate method for studying how independent variables affect the dependent variable in models that contain multiple variables or complex relationships.

3.7. Diagnostic Tests

The study determined the impact of dividend policy on the performance of 10 selected private commercial banks in Ethiopia for the years 2005 to 2024, with unbalanced panel data of 20 years. For analysis, all the dependent and independent variables were analyzed. The correlation matrix, along with the linear regression assumption, is also checked.

3.7.1. Autocorrelation (Serial Correlation) Test

A correlational technique, which helps examine the correlations between variables without changing them, will be used in this study (Field, 2013). With this method, it is possible to examine the effects of changes in the independent variable (dividend policy) on the dependent variable (such as return on assets and return on equity). The goal of the study is to find patterns and correlations in historical data over the specified period (2005–2024) that can shed light on how well various dividend policies improve bank performance. The serial correlation test like was employed to establish the effect of dividend policy on private commercial banks in Ethiopia by examining error term correlation across time for individual units and detecting time series variable relationships, which helps identify patterns and enhance statistical model accuracy.

3.7.2. Multicollinearity Test

The multicollinearity test checks for relationships between independent variables that exist within a regression model. The test shows which variables show multicollinearity problems, together with their correlation strength. The variance inflation factor (VIF) serves to help assess the multicollinearity problem. This test exists to identify whether explanatory variables show strong correlations with each other. Pearson correlation analysis enables researchers to study the linear relationship between two continuous variables. The test establishes both the strength and

orientation of variable association under the assumption of normal distribution and equal variances for linear relationship assessment. The research includes a correlation matrix analysis. The analysis helps researchers establish the relationships between variables. The independent variables in multiple regression analysis can exhibit either strong or weak correlations with each other. Explanatory variables that show a high correlation with each other create a multicollinearity problem. The presence of multicollinearity problems leads to reduced model validity.

3.7.3. Hausman test

The Hausman test functions in panel data analysis to determine whether fixed effect (FE) models or random effect (RE) models should be used. The test aims to evaluate parameter differences between methods while considering the bias-variance tradeoff in both estimators. The RE model produces unbiased estimates of coefficients at the cost of increased variance, while the FE model maintains unbiasedness but produces highly variable results (Clark and Linzer, 2013). The Durbin-Wu-Hausman (1978) test, known as the Hausman specification test, functions to detect endogenous regressors in regression models. System variables determine the values that endogenous variables express.

The random effects (RE) model should be chosen over the fixed effects (FE) model. The Hausman test results indicate no significant differences in coefficient estimates between the two models, which suggests that unobserved heterogeneity is not correlated with the explanatory variables. Therefore, the random effects model is appropriate for this analysis, which provides efficient and consistent estimates while accounting for individual bank variations over time.

3.7.4. Heteroskedasticity Test

The analysis of dividend policy effects on the performance of private commercial banks in Ethiopia requires heteroscedasticity testing to validate regression analysis results. The test verifies that error term variance remains steady across independent variables. The test serves as a fundamental requirement for making valid statistical inferences. The research will perform a heteroscedasticity test to determine dividend policy effects on private commercial bank performance for proper statistical inference

3.8. Ethical Consideration

The research relies on dividend payout ratio and dividend per share effects on the performance of private commercial banks in Ethiopia requires attention to multiple ethical factors. The research requires NBE permission to access financial data which will be used for analysis. The research follows ethical standards for data usage through this permission. The study maintains the correct financial performance data of private commercial banks while protecting their proprietary financial statement information. The study addresses these ethical dimensions to improve its overall integrity and credibility.

Chapter Four: Data Analysis, Presentation, and Discussion

4.1. Introduction

This chapter investigates how dividend payout ratio and dividend per share affects private commercial banks in Ethiopia. The analysis examines key performance indicators ROE through a detailed evaluation of the gathered data. The study uses statistical methods to evaluate how dividend payout ratios and dividends per share affect the financial outcomes of the chosen 10 private commercial banks in Ethiopia which is Awash Bank, Dashen Bank, Bank of Abyssinia, Cooperative Bank of Oromia, Hibret bank, Wegagen Bank, Nib Bank, Lion Bank, Oromia bank and Zemen Bank) from 2005 to 2024. The analysis of 186 observations from ten private banks enables the description, forecasting, and drawing of conclusions.

The chapter begins with descriptive statistics to present the characteristics of the data before using regression analysis to examine how dividend policies impact bank performance. The research includes unit root tests, diagnostic tests like autocorrelation tests, multicollinearity tests, and heteroskedasticity tests to validate the obtained results.

4.2. Descriptive Statistics

The financial performance and economic context of ten private commercial banks can be analyzed through descriptive statistics to understand their operational efficiency, profitability, dividend policies, leverage positions, and how macroeconomic factors affect their performance. The indicators, such as Return on Equity (ROE), Dividend Payout Ratio (DPR1), Dividends per Share (DPS2), Leverage (LEV3), Firm Size (BS4), Inflation Rate (INF), and Gross Domestic Product (GDP), rely on descriptive statistics. The evaluation process includes calculating average performance through mean values and data dispersion through standard deviations, as well as range values (minimum and maximum) to detect potential outliers. The descriptive study of ten private commercial banks in Ethiopia is shown in Table 4.1. The table presents statistical data about the independent and dependent variables used in this research, including mean, median, standard deviation, number of observations, and minimum and maximum values. The table displays the average indicators of variables extracted from financial statements.

Table 4.1. Summary of Descriptive Statistics

Variable	Obs.	Mean	Standard deviation	Minimum	Maximum
ROE	186	0.3724	0.1737	-0.0405	0.9264
DPR	186	0.4259	0.2115	0.00	0.8010
DPS	186	0.1698	0.1103	0.00	0.5398
LEV	186	0.8213	0.0811	0.4007	0.9212
D_BS	176	0.0026	0.0017	-0.00054	0.0123
INF	186	0.1748	0.0996	0.0280	0.3640
GDP	186	0.0929	0.0205	0.0615	0.1346

The Return on Equity (ROE) represents a vital profitability metric which shows how much profit Ethiopian private commercial banks generate from their shareholder equity, and its mean value equals 0.3724 or 37.24% during the period of 2005 G.C. – 2024 G.C. This implies Ethiopian private commercial banks make 37.24 cents profit for each birr investment. The high average value indicates that banks successfully produce substantial returns for their equity investors. The standard deviation of 0.1737 indicates substantial variation because bank returns range from -0.0405 to 0.9264, which suggests different profitability levels and risk profiles or operational approaches among the banks.

The Dividend Payout Ratio (DPR1) shows an average of 42.59%, which means Ethiopian private commercial banks pay out a large portion of their earnings as dividends while keeping the rest for reinvestment or reserves during the period of 2005-2024. The standard deviation of 21.15% indicates that there is a wide range of payout strategies among banks since some banks pay out very little while others pay out almost 80% of their earnings, showing that the majority of DPR1 variability occurs over time within the same entity rather than across entities. Based on this finding, Ethiopian private commercial banks doesn't have uniform dividend policy. The variability of DPR has an impact on the investor perception.

The average dividend per share (DPS2) is 0.17 or 17%, indicating a moderate cash return per share issued. The standard deviation of 0.112 or 11.2%, with values ranging from zero to approximately 54%, again underscores that Ethiopian private commercial bank has heterogeneous dividend

policies and possibly differences in share structures or earnings distribution preferences among the private banks.

The leverage ratio (LEV3) shows the highest mean value of 0.821 or 82.1%, which indicates that Ethiopian commercial banks use debt financing more than equity financing. The average debt portion in Ethiopian private banks' assets amounts to 82.1%, which stems from deposits, while their equity stands at 17.9%. The equity contribution of 17.9% in the Ethiopian private commercial banks' capital structure exceeds the National Bank of Ethiopia's mandatory minimum equity requirement of 8%. The standard deviation of 0.081, with a minimum of approximately 0.40 and a maximum of 0.92, indicates considerable differences in financial leverage and capital structure risk exposure. The banking industry demonstrates high leverage because it depends mainly on deposits as funding sources, which show 0.081 or 8.1% variability up and down during the period from 2005 G.C. – 2024 G.C. The maximum debt ratio 92% shows that every private commercial bank meets the National Bank of Ethiopia's established requirements. After all, no private commercial bank has less than 8% equity.

The variable "D_BS4," representing "Bank Size," is defined as the natural logarithm of the total assets of each bank. The data transformation aims to normalize the data while reducing skewness so that we can better analyze the relationship between bank size and performance metrics. The logarithmic scale enables us to compare banks of different sizes and effectively measure their asset scales. The bank size variable (D_BS4) shows an average value of 0.0026 with a standard deviation of 0.0017 and ranges between -0.00054 and 0.123 during the period from 2005 G.C-2024 G.C. The Ethiopian private commercial banking industry benefits from operational efficiency and profitability improvements when banks grow in size because they achieve better financial performance indicators such as ROE. Larger banks possess competitive advantages that enable them to provide diverse services to more customers and maintain stronger market power during negotiations. The institutions possess more resources for risk management, which makes them more resistant to economic downturns. The financial stability of institutions, together with their operational strategies and regulatory compliance, differs between larger institutions and smaller ones. The bank size variable serves as a critical factor for analyzing banking industry dynamics and financial performance effects.

The macroeconomic variable inflation (INF) shows a mean value of about 17.48% with a standard deviation of approximately 10%. The high inflation rates create challenges for banks because they affect their operational expenses and loan market conditions and interest rates, which subsequently affect their financial performance and balance sheet stability. The inflation range between 2.8% and 36.4% shows that Ethiopian private commercial banks need to adapt to changing inflation environments.

The banks operate in a stable, positive economic growth environment because their GDP growth rate stands at approximately 9.29% with minimal variability (standard deviation of 2.05%). The economic growth environment supports lending activities and financial market confidence which drives bank expansion and earnings performance.

The descriptive statistics show 10 Ethiopian private commercial banks as moderately successful institutions with different efficiency and dividend strategies, and all have high leverage. The macroeconomic data about inflation and GDP growth further contextualizes their operational environment. These variances and situations enable stakeholders to have a comprehensive understanding, which helps them make strategic decisions and evaluate performance in the competitive banking industry.

4.3 Unit Root Test or Stationarity Test

The research evaluates two important panel unit root tests, which include the Im-Pesaran-Shin (IPS) test and the Fisher-type test for analyzing dividend policy, financial performance, and macroeconomic variables of 10 private commercial banks. The research assesses the stationarity of financial indicators ROE, DPR1, DPS2, LEV3, BS4, INF, and GDP.

The Im-Pesaran-Shin (IPS) and Fisher-type unit root tests provide better advantages than the Levin-Li-Chu (LLC) and Augmented Dickey-Fuller (ADF) tests. These tests work with unbalanced panels that contain missing data points, which increases their practical value for real-world applications. The IPS and Fisher tests operate on panel data to provide robust analysis of multiple cross-sectional units throughout time. The combination of these tests produces more reliable results because when the findings match, they confirm the null hypothesis rejection of unit roots, which results in more dependable econometric modeling insights.

Table 4.2 Im-Pesaran Shin (IPS) Unit root test result

Variable	Statistics(z-t-tilde-bar)	p-value	Conclusion
ROE	-3.3549	0.0004	Stationary
DPR1	-4.5138	0.0000	Stationary
DPS2	-2.9228	0.0017	Stationary
LEV3	-2.2072	0.0137	Stationary
D_BS4	-4.8834	0.0000	Stationary
INF	-5.0804	0.0000	Stationary
GDP	-2.6794	0.0037	Stationary

Table 4.3. Fisher-Type unit root test result

Variable	Statistic (inverse chi-square)	p-value	Conclusion
ROE	51.1444	0.0002	Stationary
DPR1	106.2066	0.0000	Stationary
DPS2	52.0652	0.0001	Stationary
LEV3	43.1057	0.0020	Stationary
D_BS4	112.1215	0.0000	Stationary
INF	85.0943	0.0000	Stationary
GDP	34.1749	0.0125	Stationary

According to Table 2 above, Im-Pesaran-Shin unit root tests show that most of the variables, including ROE, DPR1, DPS2, BS4, LEV3, INF, and GDP are stationary. The low p-values (mostly < 0.05 and many close to zero) affirm that these variables are stationary in the panel context, meaning their statistical properties, such as mean and variance, are stable over time for at least some of the panels.

Under table 3 results, the Fisher-type test confirms the IPS results by showing that the null hypothesis of unit roots is rejected for all variables because of their highly significant p-values. The Fisher test combines p-values from individual unit root tests across panels to increase statistical power while handling unbalanced panel data. The Fisher test produces identical results to IPS evidence for the stationarity of all variables is clear and positive stationarity evidence that producing different p-values across different test statistics.

The Im-Pesaran-Shin and Fisher-type panel unit root tests, when used together, demonstrate that most essential financial and economic variables are stationary. The findings from this research are essential for econometric studies and financial modeling, and policy development in banking institutions. The findings allow researchers to use these variables with confidence in dynamic panel data models while making strategic decisions based on time-series patterns of these variables.

4.4 Correlation Analysis

The primary objective of correlation analysis is to establish the strength of linear relationships between two variables (Gujarati, 2009). The Pearson product-moment coefficient functions as the most commonly used bivariate correlation statistic, which this study employed. The Pearson correlation coefficient measures the strength of the relationship between two variables through values that range from +1 for perfect positive correlation to -1 for perfect negative correlation. The correlation between dependent and independent variable based on sample size is 186 of ten private commercial banks has shown the table below:

Table 4.4. Correlation Coefficient between dependent and independent variable

	ROE	DPR1	DPS2	LEV3	D_BS4	INF	GDP
ROE	1.0000						
DPR1	0.2007	1.0000					
DPS2	0.6839	0.6898	1.0000				
LEV3	-0.1036	0.0639	-0.1206	1.0000			
D_BS4	-0.0370	-0.0289	-0.0577	0.1200	1.0000		
INF	-0.0382	-0.2643	-0.1206	0.0209	-0.1197	1.0000	
GDP	0.1999	0.1526	0.1445	-0.0431	0.2006	-0.3654	1.0000

The variables ROE, DPR1, DPS2, LEV3, D_BS4, GDP, and INF show important relationships according to the correlation analysis. The relationship between ROE and DPR1 shows a moderate positive correlation of 0.2007 which indicates that higher dividend payout ratios occur with better returns on equity. The strong positive relationship between ROE and DPS2 (0.6839) confirms the dividend signaling theory because it shows that better returns on equity lead to higher dividends per share. The strong relationship between DPR1 and DPS2 (0.6898) shows that companies which

distribute more dividends tend to have higher dividend payout ratios. The weak negative relationship between ROE and LEV3 (-0.1036) shows that higher leverage might have a slight negative effect on returns on equity. The relationship between inflation (INF) and DPR1 shows a moderate negative correlation of -0.0382, which means higher inflation leads to lower dividend payments. The significant negative relationship between inflation and GDP (-0.3654) confirms the expected negative impact of rising inflation on economic growth.

The strong relationship between ROE and dividend measures shows that profitability is a key driver of shareholder returns, while the weak relationships with leverage suggest that there are complexities in how capital structure affects financial outcomes beyond simple linear relationships. Moreover, the influence of macroeconomic variables, although moderate, suggests that firms are sensitive to economic cycles and inflationary pressures, which can either enhance or restrict financial performance and dividend policies.

4.5. Discussion on Econometric Results

This part has discussed the diagnostic test and regression results. The econometric regression model is used to estimate and analyze the relationship between dividend policy and the performance of the ten private commercial banks.

4.5.1. Diagnostic Test

4.5.1.1 Multicollinearity Test

The presence of multicollinearity between independent variables in regression models leads to incorrect estimation and interpretation of regression coefficients. The Variance Inflation Factor (VIF) serves as a standard tool to determine the extent of regression coefficient inflation caused by multicollinearity. The VIF output presents values for six variables—DPS2, DPR1, BS4, LEV3, GDP, and INF—and their corresponding inverse VIF (1/VIF) values together with the average VIF across all variables.

Table 4.5 Variance Inflation Factor

Variable	VIF	1/VIF
DPR1	2.14	0.467637
DPS2	2.05	0.488175
LEV3	1.24	0.805681
D_BS4	1.21	0.826907
GDP	1.08	0.924584
INF	1.07	0.932970
Mean VIF	**1.47**	

The majority of regression applications accept VIF values between 1 and 5 because they indicate moderate predictor correlation without causing substantial damage to coefficient estimates. High VIF values above 5 indicate strong multicollinearity, which requires additional analysis or correction steps. The VIF values for all variables remain below 3, while DPS2 and DPR1 demonstrate the highest values at 2.14 and 2.05, respectively. The standard guidelines show that these values demonstrate moderate correlation but remain below the typical thresholds. The mean VIF value of 1.47 shows that multicollinearity among the predictors DPS2, DPR1, BS4, LEV3, GDP, and INF is mild and acceptable, and no immediate corrective actions are needed. This confirms that the regression coefficient estimates are likely dependable and interpretable, enabling a thorough evaluation of the influence of these variables on dependent variables such as ROA or ROE. It is important to monitor multicollinearity diagnostics to uphold the validity of regression studies, especially in financial models that incorporate interconnected economic variables.

4.5.1.2 Heteroskedasticity Tests

The Breusch-Pagan / Cook-Weisberg test functions as a standard diagnostic tool that detects heteroskedasticity in regression models. The test determines if the residuals' variance remains stable across all explanatory variables or if it changes systematically with Return on Equity (ROE) fitted values. The Breusch-Pagan / Cook-Weisberg test examines homoscedasticity (Ho) against heteroscedasticity (Ha) where the error terms' variance remains constant under Ho but changes with predictors according to Ha. The null hypothesis (H0) states that the error terms' variance

remains constant (homoscedasticity) but the alternative hypothesis (H1) states that the variance changes with the predictors, indicating heteroskedasticity.

Table 4.6 Heteroskedasticity Test Result

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho: Constant variance	chi2(1) = 32.97
Variables: fitted values of ROE	Prob > chi2 = 0.0000

The model, which uses ROE as the dependent variable and includes DPR1, DPS2, LEV3, D_BS4, GDP, and INF as independent variables, produces a chi-squared statistic of 32.97 with 1 degree of freedom and a p-value of 0.0000. The p-value of 0.0000 is less than 0.05, which causes us to reject the null hypothesis about constant variance. The residual variance in this model depends on the fitted values of ROE because heteroskedasticity exists. The results indicate that both models fail to meet the requirement of constant error variance so this study applies robust standard error methods for valid inference.

4.5.1.3 Hausman Test

The Hausman test functions as a standard statistical tool that helps researchers choose between fixed effects (FE) and random effects (RE) models when working with panel data. The test provides a statistical framework to determine if the random effects estimate remains consistent and efficient or the fixed effects estimator so as to select the best estimator for the relationship.

Table 4.7 Hausman Test Result

Null hypothesis (H_0): The Random effects model is appropriate

Alternative hypothesis (H_1): Fixed effects model is appropriate

```
. hausman fe re

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          S.E.
-------------+------------------------------------------------------------
        DPR1 |   -.4104819    -.4252158        .0147338        .0113382
        DPS2 |    1.35304      1.45367         -.10063        .0474387
        LEV3 |    .3386925     .2724319        .0662606        .0315774
      D_BS4  |   -.0564993    -.5270388        .4705395        .7847922
         GDP |    1.125714     1.116669        .0090452        .0310176
         INF |   -.0443669    -.0378337       -.0065332               .
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        8.39
                Prob>chi2 =      0.2109
                (V_b-V_B is not positive definite)
```

The Hausman test results show that the null hypothesis of no systematic difference between fixed-effects and random-effects estimators cannot be rejected at the 5% significance level because the p-value is approximately 0.211. The chi-square statistic of 8.39 with 6 degrees of freedom shows that the differences in coefficient estimates are not statistically significant. The results indicate that there is no strong evidence of endogeneity of the regressors, and consequently, the random-effects model is appropriate for this analysis.

4.5.2. Regression Results of the Two Models

The operational panel regression model analyzed financial performance factors that explain success through Return on Equity (ROE) measurements to determine dividend policy effects. The random-effects regression outputs present a thorough analysis of Return on Assets (ROA) and Return on Equity (ROE) determinants through panel data from ten groups across multiple periods. The results deliver vital information about how dividend policy affects bank performance while accounting for unobserved heterogeneity between entities that are assumed to be uncorrelated with explanatory variables.

A. Random effect GLS regression model (Using internal bank Variables**)**

The random-effects regression results for ROE reveal precise relationships between dependent variables (ROE) and independent variables (DPR1, DPS2, LEV3, BS4). The model's beta coefficients were derived using internal bank variables.

Table 4.8 Random effect GLS Regression Model result for Model 1

```
. xtreg ROE DPR1 DPS2 LEV3 D_BS4, re

Random-effects GLS regression                   Number of obs     =       176
Group variable: ID                              Number of groups  =        10

R-sq:                                           Obs per group:
     within  = 0.4440                                         min =        15
     between = 0.8537                                         avg =      17.6
     overall = 0.6074                                         max =        19

                                                Wald chi2(4)      =    178.12
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0000
```

ROE	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
DPR1	-.4116517	.055261	-7.45	0.000	-.5199613	-.303342
DPS2	1.511086	.1154337	13.09	0.000	1.28484	1.737332
LEV3	.2138844	.1108641	1.93	0.054	-.0034052	.4311739
D_BS4	2.969146	4.792333	0.62	0.536	-6.423654	12.36195
_cons	.1048073	.0908315	1.15	0.249	-.0732192	.2828337
sigma_u	.03610245					
sigma_e	.10053228					
rho	.1142307	(fraction of variance due to u_i)				

N.B. Significance Markers

*** for p < 0.001 (DPR, DPS)

** for p < 0.01

* for p < 0.05 (LEV)

The ROE random-effects GLS regression model shows excellent fit because the within R-squared equals 44.4% and the between R-squared equals 85.4% and the overall R-squared equals 60.7%. The Wald chi-square statistic of 178.12 with a p-value of 0.0000 indicates that the model is highly statistically significant overall. The Dividend Payout Ratio (DPR1) has a statistically significant negative effect on ROE, with a coefficient of approximately -0.41, implying that higher dividend payout ratios are associated with lower return on equity. Conversely, Dividend Per Share (DPS2) shows a strong positive and highly significant effect on ROE, with a coefficient of about 1.51, indicating that higher dividend payments per share are linked to increased profitability. Leverage (LEV3) has a positive effect that is marginally significant at the 5% level, suggesting a weak positive association with ROE. Changes in bank size (D_BS4) have a positive but statistically insignificant impact.

The variance components reveal that about 11.4% of the total variance in ROE is due to differences across firms, with the majority of variation occurring within firms over time. Overall, these findings emphasize the significant but opposite roles of dividend payout ratio and dividend per share in explaining firm profitability as measured by ROE, while leverage shows some influence, and board size changes appear less impactful

B. Random effect GLS regression (Using bank internal and macroeconomic variables)

The random-effects regression results for ROE reveal precise relationships between dependent variables (ROE) and independent variables (DPR1, DPS2, LEV3, BS4, INF GDP). The model's beta coefficients were derived using internal bank variables and macroeconomic variables.

Table 4.9 Random effect GLS regression model result for Model 2

```
. xtreg ROE DPR1 DPS2 LEV3 D_BS4 INF GDP, re

Random-effects GLS regression                   Number of obs     =        176
Group variable: ID                              Number of groups  =         10

R-sq:                                           Obs per group:
     within  = 0.4753                                         min =         15
     between = 0.8673                                         avg =       17.6
     overall = 0.6228                                         max =         19

                                                Wald chi2(6)      =     181.11
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
```

ROE	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
DPR1	-.4252158	.0561534	-7.57	0.000	-.5352743	-.3151572
DPS2	1.45367	.1164371	12.48	0.000	1.225458	1.681883
LEV3	.2724319	.1100477	2.48	0.013	.0567423	.4881214
D_BS4	-.5270388	4.846026	-0.11	0.913	-10.02508	8.970998
INF	-.0378337	.0863232	-0.44	0.661	-.2070242	.1313567
GDP	1.116669	.418554	2.67	0.008	.2963185	1.93702
_cons	-.014138	.101164	-0.14	0.889	-.2124158	.1841398
sigma_u	.04568833					
sigma_e	.0983294					
rho	.17756099	(fraction of variance due to u_i)				

N.B. Significance Markers

*** for p < 0.001 (DPR, DPS)

** for p < 0.01 (GDP)

* for p < 0.05 (LEV)

The random-effects GLS regression model investigates the relationship between DPR1, DPS2, LEV3, D_BS4, INF, and GDP and ROE (Return on Equity) through panel data from 10 groups containing 176 observations. The model explains 47.5% of the within-group variance and a

substantial 86.7% of the between-group variance in ROE, yielding an overall R-squared of 62.3%. The Wald chi-square statistic of 181.11 with a p-value of 0.0000 confirms that the set of explanatory variables collectively have a highly significant effect on ROE.

The coefficient of DPR1 shows a significant negative relationship with ROE (coefficient = -0.4252, $p < 0.001$), indicating that an increase in DPR1 reduces ROE. DPS2 has a strong positive effect (coefficient = 1.4537, $p < 0.001$), indicating that higher DPS2 is associated with increased ROE. LEV3 also positively and significantly affects ROE (coefficient = 0.2724, $p = 0.013$), implying that leverage contributes positively to profitability. GDP is another significant positive predictor (coefficient = 1.1167, $p = 0.008$), highlighting the beneficial role of economic growth on firm profitability. D_BS4 and INF, however, are insignificant predictors (p-values 0.913 and 0.661, respectively), showing no reliable impact on ROE within this model. The constant term is not statistically significant.

The variance component estimates reveal that approximately 17.8% of the variance in ROE is attributable to differences between groups (rho = 0.178), whereas the majority originates from within-group fluctuations. This suggests moderate heterogeneity across groups in ROE. Overall, the model provides strong evidence that dividend payout ratio (DPR1), dividend per share (DPS2), leverage (LEV3), and macroeconomic growth (GDP) are key factors influencing ROE, while the balance sheet dummy and inflation rate do not significantly affect firm profitability in this study.

4.5.3. Discussion on Findings

The analysis of regression results draws from the relevant literature, which chapter two of this study presents. The study analyzed the relationship between dependent and independent variables through its findings, which were then compared to theoretical literature and other researchers' findings presented in the empirical review section of this study. The analysis of dividend payout ratio and dividend per share & its relationship with leverage and bank size and macroeconomic factors as well as its impact on firm profitability based on ROE shows consistent evidence which matches both theoretical and existing research in this area.

A. Dividend Payout Ratio (DPR)

The negative and significant at 1% level relationship between Dividend Payout Ratio (DPR1) and ROE supports the bird-in-hand theory and signaling theory by showing that increased dividend

payouts reduce the retained earnings available for reinvestment and thus lower firm profitability. Research evidence supports the notion that too much dividend distribution weakens future growth opportunities and decreases firm value. The negative correlation could also stem from agency theory because dividend payments reduce free cash flow which in turn may reduce agency conflicts by limiting managerial spending discretion. The result is consistent with previous study of (Nebiyu and Tilahun, 2013) and (Onyeogo Solomon, 2017), who found that statistically significant and negative relationship. However contradict against the previous study of (Agyei and Yiadom, 2010), (Nganga Carolina, 2016), (Israeli and Bein, 2017), (Neway Adimasu, 2019) who found that the result has positive and significant relationship between DPR and both ROA and ROE.

B. Dividend per Share (DPS)

The results of all models show that Dividend per Share (DPS2) has a strong positive relationship and significant at 1% level with ROE indicating that absolute dividend payments per share have a positive impact on corporate success. The signaling theory supports this relationship because dividend payments demonstrate management confidence about future earnings which improves investor perception and thus enhances firm value and performance. The investment strategy follows the bird in hand theory because investors tend to choose dividend income over potential capital gains. The result is consistent with previous study of (Agyei and Yiadom, 2010), (Nganga Carolina, 2016), (Onyeogo Solomon, 2017), (Kioko, 2017) who found that statistically significant and positive relationship.

The evidence shows that rising DPS values demonstrate financial stability and sustainable earnings which builds investor confidence. The different effects between DPR and DPS indicate that high payout ratios might restrict essential reinvestment for profitability yet stable dividend payments per share function as a trustworthy indicator of corporate performance and shareholder value growth.

C. Leverage

The ratio of debt to total assets serves as the measure of leverage which indicates how much banks depend on debt financing for their operations. The regression results for Ethiopian private commercial banks show that leverage produces complex effects. The literature presents conflicting evidence regarding leverage's impact on financial performance because high debt levels create potential risks. The analysis shows a statistically insignificant positive relationship between

profitability and leverage (β = 0.0797, t = 1.5264, p > 0.10) which supports trade-off theory by indicating that profitable banks use debt more but must manage their risk exposure (2024). The mixed statistical significance indicates multiple factors influence leverage decisions in Ethiopian banks (2020).

The agency cost theory shows that debt and dividend payments help to discipline management, reduce free cash flow, and mitigate agency conflicts, which in turn improve performance. The positive effect demonstrates how debt serves as a regulatory mechanism according to agency theory because it forces management to maintain consistent interest and principal payments

The weak relationship between leverage and ROA in specific models supports previous studies which found that operational profitability responds more to equity returns than to leverage. The result contradicts who found that the result has negative and insignificant relationship against the previous study of (Neway Adimasu, 2019), between LEV and both ROA and ROE. According to four models of the result is small coefficients and marginal significance levels indicate that leverage's impact on profitability depends on both firm-specific factors and external economic conditions.

D. Bank Size

The growth of Ethiopian private commercial banks' size shows a positive yet mostly insignificant statistical relationship with ROE and ROA when controlling for other factors. Large corporations maintain stable cash flows and better financial market access which allows them to distribute dividends consistently and pursue investment opportunities (2024). According to agency theory size functions as a monitoring and control proxy which helps resolve agency conflicts through dividend payments and demonstrates financial stability. The research shows that size functions as a crucial contextual factor yet its direct relationship with profitability metrics appears to be less significant than other financial strategies and macroeconomic factors. The findings from all models show that changes in board size (D_BS4) fail to reach statistical significance which supports the corporate governance literature that board effectiveness depends more on composition and dynamics than on size.

E. Inflation

The data shows no significant relationship between inflation and ROE which indicates that during the studied period and context inflation does not affect corporate profitability or dividend policies of Ethiopian private commercial banks. The empirical evidence regarding inflation's effect on dividend policy remains mixed because inflation can either protect or mislead dividend policy through its impact on profitability and actual returns. The minimal effect on profitability and dividend policies may stem from steady inflation rates or companies' strategies to manage rising prices.

The banking sector demonstrates resistance to inflationary pressures which explains why this variable did not reach statistical significance. Banks implement various strategies to combat inflation through their ability to modify interest rates for loans and deposits. The banking sector maintains profitability during inflationary periods because it earns higher nominal interest margins from inflation. The financial system's stability together with effective monetary policies helped banks resist inflationary pressures which reduced its impact on their performance metrics. The banking sector demonstrates resilience through its adaptive strategies which minimize the negative effects of inflation on profitability. The findings match previous studies which show that inflation's effect on dividend payments depends on firm-specific and sectoral variables.

F. Gross Domestic Product

GDP growth substantially and positively influences ROE suggesting that enterprises operating in more advantageous macroeconomic conditions exhibit superior financial performance. The results show a strong positive relationship between GDP and ROE, indicating that higher economic growth is associated with better profitability for banks. This is in line with the expectation that a strong economy increases lending opportunities, increases demand for banking services and ultimately improves financial performance. From a lifecycle viewpoint, during phases of elevated GDP growth, companies may opt to hold earnings for reinvestment instead of augmenting dividends, favoring long-term growth over immediate disbursement. This analysis indicates that the positive correlation with performance suggests that macroeconomic expansion enhances both operational success and shareholder returns.

Chapter Five: Summary, Conclusion and Recommendation

5.1. Summary and Conclusion

The research shows that dividend payout ratio and dividend per share makes a significant impact on the performance of private commercial banks operating in Ethiopia. The study demonstrates a strong negative relationship between DPR and ROE in private commercial banks operating in Ethiopia. Dividend payments that exceed expectations reduce the amount of capital available for reinvestment which negatively impacts profitability according to this relationship. The positive correlation between DPS and ROE indicates that steady dividend payments boost shareholder value by supporting the signaling theory. These findings answer the first research question by demonstrating how dividend policies affect financial performance through signaling and trade-off mechanisms.

The results support the dividend relevance theory because DPS directly affects ROE as shown by their statistical relationship. The results contradict the dividend irrelevance theory because dividends create value in the studied companies. The second research question receives a detailed evaluation from this study because it demonstrates the requirement for contextual understanding of these theoretical frameworks within the Ethiopian banking sector.

Ethiopian commercial banks demonstrate varied dividend payout methods according to research findings. Different banking institutions show varying levels of dividend payment versus retained earnings for future growth which indicates inconsistent dividend strategies. The study addresses the third research question by demonstrating the necessity of analyzing these practices to create better future policy frameworks.

The research investigates the dividend strategies of specific private banks which reveals that some banks maintain consistent payout ratios yet others adjust their policies according to their financial circumstances. The study investigates different dividend distribution methods among Ethiopian banks while demonstrating how these strategies impact their performance to answer the fourth research question. The positive relationship between GDP demonstrates that financial performance and dividend policy alignment require complete economic conditions and synchronized economic

cycles. The insignificant role of inflation in this study demonstrates empirical uncertainty while showing that economic stability and strong adjustments maintain moderation.

The research findings deliver important knowledge yet readers must understand how these findings might limit the scope of the investigation. The study faces an important data limitation because it lacks stock price information that prevents full evaluation of market responses to dividend adjustments and their effects on shareholder value. The study investigates a limited number of banks so it might not reveal the complete range of sector-wide practices. Future research must incorporate wider data sets that include stock price movements to improve understanding about dividend policies and market dynamics.

The research adds value to existing literature through conclusion mapping to research questions and acknowledges study boundaries which provide practical recommendations for Ethiopian banking stakeholders.

5.2. Recommendation

On the basis of the analysis results and the conclusion of the research, it is possible to draw several recommendations. Summary of the overall recommendations of the analysis results on the relationship between dividend policy and performance on Ethiopian private commercial banks leads to several practical recommendations.

- Banks should set their DPR threshold between 30% and 50%. The specified range enables meaningful shareholder returns alongside enough retained earnings for future growth investments. Banks that maintain their DPR within this specified range demonstrate financial health and stability while preserving their ability to fund upcoming projects.
- Bank management should use consistent and stable dividend payments per share as a signaling tool to improve investor confidence and business valuation.
- Banks should target a leverage ratio between 3:1 and 4:1. The specified leverage ratio enables banks to maximize return through debt while keeping financial risks at a safe level. Banks that keep their leverage within this threshold can achieve optimal capital structure management and support growth initiatives and maintain long-term stability.
- Banks need to perform periodic assessments of their dividend policies and leverage strategies to respond to shifting market conditions and financial performance indicators.

The proactive approach maintains policies which match both shareholder expectations and the bank's growth objectives.

- Bank regulators together with policymakers need to establish an environment which supports suitable dividend policies that match economic growth patterns. Banks need to develop strategic plans which leverage macroeconomic development while using flexible financial practices to reduce inflation risks because GDP growth has a significant positive effect on banking performance but inflation has a minimal impact.
- Banks need to maintain active communication with their stakeholders including shareholders and regulatory bodies to determine their expectations about dividend payments and leverage levels. Through stakeholder engagement banks can create policies which fulfill their financial targets and satisfy stakeholder needs.

5.3. Contribution to Knowledge

This research investigates how dividend strategies affect business performance in Ethiopia to bank industry comprehension. The research investigated sectors of private commercial banking 20 years from 2005 to 2024. The research adds substantial value to existing knowledge by proving and extending dividend policy theories in Ethiopian private commercial banks which operate in an understudied emerging market setting. The research delivers comprehensive findings about how dividend payout ratios and dividends per share affect financial performance indicator ROE thus resolving previous empirical study uncertainties. The research results improve academic knowledge about dividend policy by demonstrating the importance of residual and signaling theories and trade-off and agency theories in a dynamic banking sector environment. The research improves methodological quality by implementing dynamic panel data approaches which produce reliable and trustworthy findings that benefit both academic researchers and practitioners. The research fills an essential gap in Ethiopian financial studies by providing relevant comparisons to banking sectors found in other emerging economies.

5.4. Recommendations for Future Research

The analysis improves understanding on the relationship between dividend payout ratio and dividend per share and bank performance while exposing weaknesses and proposing future research directions. These recommendations and future study proposals aim to improve policy development and managerial practices and scholarly discussions about dividend policies and

financial performance in the banking sectors of Ethiopia and similar emerging economies. Future research needs to focus on specific areas to address current gaps in knowledge and adapt to the changing Ethiopian banking environment. The study should expand its sample size to include various financial institutions, including microfinance entities and insurance companies to gain a better understanding of dividend policy and performance of the financial sector. This comparative analysis will also address industry-specific nuances.

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Appendices

A. Unit root tests

```
. xtset ID Year
       panel variable:  ID (unbalanced)
        time variable:  Year, 2005 to 2024
                delta:  1 unit
. . summarize ROA ROE DPR1 DPS2 LEV3 D_BS4 INF GDP
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
         ROA |       186    .0226723    .0081843  -.0182016   .0467729
         ROE |       186    .3724576     .173768   -.0405405   .9264311
        DPR1 |       186    .4250652    .2114945          0   .8010242
        DPS2 |       186    .1698297    .1103241          0   .5398229
        LEV3 |       186    .8213383    .0811574    .4007828    .921285
-------------+--------------------------------------------------------
      D_BS4 |       176    .0025757    .0016869   -.0005413   .0123181
         INF |       186    .1748333    .0995886        .028       .364
         GDP |       186    .0929348    .0205095    .0615342   .1346072
. xtunitroot ips ROA
Im-Pesaran-Shin unit-root test for ROA
--------------------------------------
Ho: All panels contain unit roots         Number of panels      =     10
Ha: Some panels are stationary            Avg. number of periods =  18.60
------------------------------------------------------------------------------
                                Fixed-N exact critical values
               Statistic      p-value        1%      5%      10%
------------------------------------------------------------------------------
 t-bar            -2.7402                      (Not available)
 t-tilde-bar      -2.1589
 Z-t-tilde-bar    -3.2132       0.0007
------------------------------------------------------------------------------

xtunitroot ips ROE
------------------------------------------------------------------------------
                                Fixed-N exact critical values
               Statistic      p-value        1%      5%      10%
------------------------------------------------------------------------------
 t-bar            -2.5953                      (Not available)
 t-tilde-bar      -2.1932
 Z-t-tilde-bar    -3.3549       0.0004
------------------------------------------------------------------------------

. xtunitroot ips DPR1
------------------------------------------------------------------------------
                                Fixed-N exact critical values
               Statistic      p-value        1%      5%      10%
------------------------------------------------------------------------------
 t-bar            -3.3185                      (Not available)
```

```
t-tilde-bar       -2.4733
Z-t-tilde-bar     -4.5138       0.0000
------------------------------------------------------------------------------
. xtunitroot ips DPS2
------------------------------------------------------------------------------
                                Fixed-N exact critical values
               Statistic     p-value        1%      5%      10%
------------------------------------------------------------------------------
t-bar            -2.4810                    (Not available)
t-tilde-bar      -2.0887
Z-t-tilde-bar    -2.9228       0.0017
------------------------------------------------------------------------------
. xtunitroot ips LEV3
------------------------------------------------------------------------------
                                Fixed-N exact critical values
               Statistic     p-value        1%      5%      10%
------------------------------------------------------------------------------
t-bar            -2.2397                    (Not available)
t-tilde-bar      -1.9157
Z-t-tilde-bar    -2.2072       0.0137
------------------------------------------------------------------------------
. xtunitroot ips INF
------------------------------------------------------------------------------
                                Fixed-N exact critical values
               Statistic     p-value        1%      5%      10%
------------------------------------------------------------------------------
t-bar            -3.3132                    (Not available)
t-tilde-bar      -2.6103
Z-t-tilde-bar    -5.0804       0.0000
------------------------------------------------------------------------------
. . xtunitroot ips GDP
------------------------------------------------------------------------------
                                Fixed-N exact critical values
               Statistic     p-value        1%      5%      10%
------------------------------------------------------------------------------
t-bar            -2.2711                    (Not available)
t-tilde-bar      -2.0299
Z-t-tilde-bar    -2.6794             0.0037
------------------------------------------------------------------------------
. xtunitroot ips D_BS4
------------------------------------------------------------------------------
                                Fixed-N exact critical values
               Statistic     p-value        1%      5%      10%
------------------------------------------------------------------------------
t-bar            -3.5322                    (Not available)
t-tilde-bar      -2.5480
Z-t-tilde-bar    -4.8834             0.0000
------------------------------------------------------------------------------
.
. xtunitroot fisher ROA, dfuller lags(0)
------------------------------------------------------------------------------
```

```
                              Statistic      p-value
------------------------------------------------------------------------------
Inverse chi-squared(20)   P       72.2793       0.0000
Inverse normal            Z       -4.5084       0.0000
Inverse logit t(54)       L*      -5.9423       0.0000
Modified inv. chi-squared Pm       8.2661       0.0000
------------------------------------------------------------------------------
. . xtunitroot fisher ROE, dfuller lags(0)
------------------------------------------------------------------------------
                              Statistic      p-value
------------------------------------------------------------------------------
Inverse chi-squared(20)   P       51.1444       0.0002
Inverse normal            Z       -4.1228       0.0000
Inverse logit t(54)       L*      -4.2042       0.0000
Modified inv. chi-squared Pm       4.9244       0.0000
------------------------------------------------------------------------------
. xtunitroot fisher DPR1, dfuller lags(0)

Fisher-type unit-root test for DPR1
Based on augmented Dickey-Fuller tests
------------------------------------------------------------------------------
                              Statistic      p-value
------------------------------------------------------------------------------
Inverse chi-squared(20)   P      106.2066       0.0000
Inverse normal            Z       -6.7180       0.0000
Inverse logit t(54)       L*      -8.9677       0.0000
Modified inv. chi-squared Pm      13.6305       0.0000
------------------------------------------------------------------------------

. xtunitroot fisher DPS2, dfuller lags(0)

Fisher-type unit-root test for DPS2
Based on augmented Dickey-Fuller tests
------------------------------------------------------------------------------
                              Statistic      p-value
------------------------------------------------------------------------------
Inverse chi-squared(20)   P       52.0652       0.0001
Inverse normal            Z       -3.6230       0.0001
Inverse logit t(54)       L*      -4.0239       0.0001
Modified inv. chi-squared Pm       5.0699       0.0000
------------------------------------------------------------------------------
. xtunitroot fisher LEV3, dfuller lags(0)

Fisher-type unit-root test for LEV3
Based on augmented Dickey-Fuller tests
------------------------------------------------------------------------------
                              Statistic      p-value
------------------------------------------------------------------------------
Inverse chi-squared(20)   P       43.1057       0.0020
Inverse normal            Z       -2.6830       0.0036
Inverse logit t(54)       L*      -2.9972       0.0021
```

```
 Modified inv. chi-squared Pm        3.6533       0.0001
.
. xtunitroot fisher D_BS4, dfuller lags(0)
(10 missing values generated)

Fisher-type unit-root test for D_BS4
Based on augmented Dickey-Fuller tests
------------------------------------------------------------------------------
                             Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(20)   P       112.1215       0.0000
 Inverse normal            Z        -7.5736       0.0000
 Inverse logit t(54)       L*       -9.7416       0.0000
 Modified inv. chi-squared Pm       14.5657       0.0000
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------

 xtunitroot fisher INF, dfuller lags(0)

Fisher-type unit-root test for INF
Based on augmented Dickey-Fuller tests
--------------------------------------
                             Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(20)   P        85.0943       0.0000
 Inverse normal            Z        -6.9204       0.0000
 Inverse logit t(54)       L*       -7.4621       0.0000
 Modified inv. chi-squared Pm       10.2923       0.0000
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------
.
. xtunitroot fisher GDP, dfuller lags(0)

Fisher-type unit-root test for GDP
Based on augmented Dickey-Fuller tests
------------------------------------------------------------------------------
                                       Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(20)   P          34.1749        0.0250
 Inverse normal            Z          -2.8768        0.0020
 Inverse logit t(54)       L*         -2.6532        0.0052
 Modified inv. chi-squared Pm          2.2412        0.0125
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------
```

B. Descriptive Statistics and Correlation Matrix

```
. summarize ROA ROE DPR1 DPS2 D_BS4 LEV3 INF GDP
```

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	186	.0226723	.0081843	-.0182016	.0467729
ROE	186	.3724576	.173768	-.0405405	.9264311
DPR1	186	.4250652	.2114945	0	.8010242
DPS2	186	.1698297	.1103241	0	.5398229
D_BS4	176	.0025757	.0016869	-.0005413	.0123181
LEV3	186	.8213383	.0811574	.4007828	.921285
INF	186	.1748333	.0995886	.028	.364
GDP	186	.0929348	.0205095	.0615342	.1346072

```
.
. correlate ROA ROE DPR1 DPS2 LEV3 D_BS4 INF GDP
(obs=176)
```

	ROA	ROE	DPR1	DPS2	LEV3	D_BS4	INF	GDP
ROA	1.0000							
ROE	0.6432	1.0000						
DPR1	0.2002	0.2007	1.0000					
DPS2	0.4193	0.6839	0.6898	1.0000				
LEV3	0.0564	-0.1036	0.0639	-0.1206	1.0000			
D_BS4	0.0182	-0.0370	-0.0289	-0.0577	0.1200	1.0000		
INF	-0.0416	-0.0382	-0.2643	-0.1206	0.0209	-0.1197	1.0000	
GDP	0.2131	0.1999	0.1526	0.1445	-0.0431	0.2006	-0.3654	1.0000

C. **Regression Model**

```
. xtreg ROE DPR1 DPS2 LEV3 D_BS4, fe

Fixed-effects (within) regression               Number of obs     =       176
Group variable: ID                              Number of groups  =        10

R-sq:                                           Obs per group:
     within  = 0.4469                                         min =        15
     between = 0.8368                                         avg =      17.6
     overall = 0.5972                                         max =        19

                                                F(4,162)          =     32.72
corr(u_i, Xb)  = 0.3878                         Prob > F          =    0.0000

------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        DPR1 |  -.3907118   .0564291    -6.92   0.000    -.5021431   -.2792804
        DPS2 |   1.388949   .1271835    10.92   0.000     1.137797    1.6401
        LEV3 |   .2912608   .1158538     2.51   0.013     .0624824    .5200392
      D_BS4 |   4.174712   4.815382     0.87   0.387      -5.3343    13.68372
       _cons |   .0524014   .0926573     0.57   0.572    -.1305705    .2353733
-------------+----------------------------------------------------------------
     sigma_u |  .05793894
     sigma_e |  .10053228
         rho |  .24933198   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(9, 162) = 4.30                     Prob > F = 0.0000

.
. xtreg ROE DPR1 DPS2 LEV3 D_BS4 GDP INF, fe

Fixed-effects (within) regression               Number of obs     =       176
Group variable: ID                              Number of groups  =        10

R-sq:                                           Obs per group:
     within  = 0.4774                                         min =        15
     between = 0.8528                                         avg =      17.6
     overall = 0.6117                                         max =        19

                                                F(6,160)          =     24.36
corr(u_i, Xb)  = 0.4078                         Prob > F          =    0.0000

------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        DPR1 |  -.4104819   .0572866    -7.17   0.000    -.5236173   -.2973465
        DPS2 |    1.35304     .12573    10.76   0.000     1.104736    1.601345
        LEV3 |   .3386925   .1144886     2.96   0.004     .1125888    .5647961
      D_BS4 |  -.0564993   4.909161    -0.01   0.991     -9.75161    9.638611
         GDP |   1.125714   .4197017     2.68   0.008     .2968449    1.954584
         INF |  -.0443669   .0860892    -0.52   0.607    -.2143846    .1256509
       _cons |  -.0562058   .1026825    -0.55   0.585    -.2589937    .1465821
-------------+----------------------------------------------------------------
     sigma_u |  .05907327
     sigma_e |   .0983294
         rho |  .26520489   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(9, 160) = 4.43                     Prob > F = 0.0000

.
. estimate store fe
```

```
. xtreg ROE DPR1 DPS2 LEV3 D_BS4, re

Random-effects GLS regression                   Number of obs     =        176
Group variable: ID                              Number of groups  =         10

R-sq:                                           Obs per group:
     within  = 0.4440                                         min =         15
     between = 0.8537                                         avg =       17.6
     overall = 0.6074                                         max =         19

                                                Wald chi2(4)      =     178.12
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000

------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        DPR1 |  -.4116517    .055261    -7.45   0.000    -.5199613    -.303342
        DPS2 |   1.511086   .1154337    13.09   0.000      1.28484    1.737332
        LEV3 |   .2138844   .1108641     1.93   0.054    -.0034052    .4311739
       D_BS4 |   2.969146   4.792333     0.62   0.536    -6.423654    12.36195
       _cons |   .1048073   .0908315     1.15   0.249    -.0732192    .2828337
-------------+----------------------------------------------------------------
     sigma_u |  .03610245
     sigma_e |  .10053228
         rho |   .1142307   (fraction of variance due to u_i)
------------------------------------------------------------------------------

.
. xtreg ROE DPR1 DPS2 LEV3 D_BS4 INF GDP, re

Random-effects GLS regression                   Number of obs     =        176
Group variable: ID                              Number of groups  =         10

R-sq:                                           Obs per group:
     within  = 0.4753                                         min =         15
     between = 0.8673                                         avg =       17.6
     overall = 0.6228                                         max =         19

                                                Wald chi2(6)      =     181.11
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000

------------------------------------------------------------------------------
         ROE |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        DPR1 |  -.4252158   .0561534    -7.57   0.000    -.5352743   -.3151572
        DPS2 |    1.45367   .1164371    12.48   0.000     1.225458    1.681883
        LEV3 |   .2724319   .1100477     2.48   0.013     .0567423    .4881214
       D_BS4 |  -.5270388   4.846026    -0.11   0.913    -10.02508    8.970998
         INF |  -.0378337   .0863232    -0.44   0.661    -.2070242    .1313567
         GDP |   1.116669    .418554     2.67   0.008     .2963185     1.93702
       _cons |   -.014138    .101164    -0.14   0.889    -.2124158    .1841398
-------------+----------------------------------------------------------------
     sigma_u |  .04568833
     sigma_e |   .0983294
         rho |  .17756099   (fraction of variance due to u_i)
------------------------------------------------------------------------------

.
. estimate store re
```

. hausman fe re

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
DPR1	-.4104819	-.4252158	.0147338	.0113382
DPS2	1.35304	1.45367	-.10063	.0474387
LEV3	.3386925	.2724319	.0662606	.0315774
D_BS4	-.0564993	-.5270388	.4705395	.7847922
GDP	1.125714	1.116669	.0090452	.0310176
INF	-.0443669	-.0378337	-.0065332	.

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 8.39
Prob>chi2 = 0.2109
(V_b-V_B is not positive definite)