T.R.
ISTANBUL SABAHATTIN ZAIM UNIVERSITY
GRADUATE EDUCATION INSTITUTE
DEPARTMENT OF ISLAMIC ECONOMICS AND FINANCE

IMPACT OF BASEL III ON BANKING PERFORMANCE AND COMPLIANCE: A COMPARATIVE STUDY OF PARTICIPATION AND DEPOSIT BANKS IN TÜRKİYE

MA THESIS

Ahmet Enes ÇETİNKAYA

Istanbul
June-2025

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DECLARATION OF SCIENTIFIC ETHICS AND ORIGINALITY

This is to certify that this MA thesis dissertation titled “Impact Of Basel III On Banking Performance And Compliance: A Comparative Study Of Participation And Deposit Banks In Türkiye” is my own work and I have acted according to scientific ethics and academic rules while producing it. I have collected and used all information and data according to scientific ethics and guidelines on thesis writing of Sabahattin Zaim University. I have fully referenced, in both the text and bibliography, all direct and indirect quotations and all sources I have used in this work.

Ahmet Enes ÇETİNKAYA

Istanbul, June 2025

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ABSTRACT

IMPACT OF BASEL III ON BANKING PERFORMANCE AND COMPLIANCE: A COMPARATIVE STUDY OF PARTICIPATION AND DEPOSIT BANKS IN TÜRKİYE

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Basel III, a global regulatory framework introduced in the aftermath of the 2008 financial crisis, aims to enhance bank capital, liquidity, and risk management practices. This research evaluates the impact of Basel III on the financial performance and compliance behavior of deposit (conventional) and participation (Islamic) banks, focusing on key indicators including profitability, efficiency, liquidity, solvency, and risk management. Utilizing regression analysis on Turkish banks, the study compares pre and post-Basel III performance while controlling for macroeconomic variables such as interest rates, inflation, and asset size. The results demonstrate that Basel III influenced bank performance, although with distinct effects across banking models. Profitability declined in both sectors—most notably in return on assets and fee-based income—while participation banks exhibited greater sensitivity to inflation and operational inefficiencies. In efficiency, deposit banks achieved cost improvements, whereas participation banks experienced a decline in fee income efficiency. Liquidity trends diverged: participation banks maintained stronger liquidity buffers but adopted more conservative lending strategies, while deposit banks expanded lending relative to deposits. In terms of solvency, participation banks increased securities holdings and adjusted their capital structures, whereas deposit banks relied more on leverage. Regarding risk management, participation banks demonstrated a more prudent approach by increasing provisioning and reducing off-balance sheet exposures. Overall, the findings confirm that Basel III has had varied effects on different dimensions of banking performance. The analysis offers policy

insights for tailoring regulatory strategies to accommodate diverse banking models while safeguarding financial stability.

Key terms: Basel III, Banking performance, Participation Banking, Turkish Banking Sector

ÖZET

BASEL III'ÜN BANKACILIK PERFORMANSI VE UYUMLULUĞU ÜZERİNDEKİ ETKİSİ: TÜRKİYE'DEKİ KATILIM VE MEVDUAT BANKALARININ KARŞILAŞTIRMALI BİR ÇALIŞMASI

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2008 küresel finansal krizinin ardından geliştirilen Basel III düzenlemeleri, bankaların sermaye yeterliliği, likidite yapısı ve risk yönetimi uygulamalarını güçlendirmeyi amaçlamaktadır. Bu tez, Basel III'ün finansal performans üzerindeki etkilerini ve Türkiye'de faaliyet gösteren katılım (İslami) ve mevduat (konvansiyonel) bankalarının uyum davranışlarını karşılaştırmalı olarak incelemektedir. Çalışma; kârlılık, verimlilik, likidite, borç ödeme gücü ve risk yönetimi gibi performans göstergeleri üzerinden, Basel III öncesi ve sonrası dönemler için regresyon analizleriyle gerçekleştirilmiştir. Ayrıca döviz kuru, faiz oranı, enflasyon ve aktif büyüklüğü gibi makroekonomik değişkenler kontrol edilmiştir. Elde edilen bulgular, Basel III'ün bankacılık performansını etkilediğini; ancak bu etkinin bankacılık modellerine göre farklılık gösterdiğini ortaya koymaktadır. Her iki bankacılık türünde de kârlılık azalırken, bu düşüş aktif kârlılığı ve faiz dışı gelirlerde daha belirgindir. Katılım bankalarının enflasyona karşı daha duyarlı olduğu ve operasyonel verimsizliklerden daha fazla etkilendiği görülmüştür. Verimlilik açısından mevduat bankaları maliyetlerini azaltırken, katılım bankalarının hizmet geliri verimliliğinde düşüş yaşanmıştır. Likidite bakımından katılım bankaları daha yüksek likidite tamponları korurken, kredi verme konusunda temkinli davranmıştır. Ödeme kabiliyeti açısından, katılım bankaları menkul kıymet yönünde, mevduat bankaları kaldıraç oranlarını yükseltmiştir. Risk yönetiminde ise katılım bankalarının karşılık oranlarını artırarak ve bilanço dışı riskleri azaltarak temkinli strateji izlediği tespit edilmiştir. Genel olarak, bulgular Basel III'ün bankacılık performansının üzerinde çeşitli

etkilere sahip olduğunu doğrulamaktadır. Tez, düzenleyici politikaların bankacılık modellerinin yapısal farklılıklarını gözeterek tasarlanması gerektiğine dair politika önerileri sunmaktadır.

Anahtar Sözcükler: Basel III, Bankacılık performansı, Katılım Bankacılığı, Türk Bankacılık Sektörü

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LIST OF ABBREVIATIONS

BRSA = The Banking Regulation and Supervision Agency

CAR = Capital Adequacy Ratio

CBRT = The Central Bank of the Republic of Türkiye

CET1= Common Equity Tier 1

CoV = Coefficient of Variation

CoV = Coefficient of Variation

CPI = Consumer Price Index

CRAR = Capital Risk-Weighted Assets Ratio

FCB = Fees, Commission and Banking Services

FCB= Fees, Commission and Banking Services

FX = Foreign Currency

GQ = Goldfeld-Quandt

HQLA = High Quality Liquid Assets

INF = Inflation Rate

INTR = Interest Rate

IRB = Internal Ratings-Based

LCR= Liquidity Coverage Ratio

NPL = Non Performing Loans

NPM = Net Profit Margin

NSFR= Net Stable Funding Ratio

PBAT = The Participation Banks Association of Türkiye

RESET = Regression Specification Error Test

ROA = Return on Assets

ROE =Retusn on Equity

RWA = Risk Weighted Assets

Std Dev = Standart Deviation

Std Dev = Standart Deviation

SW = Shapiro-Wilk

TBAT = The Banks Association of Türkiye

VIF = Variance Inflation Factor

CHAPTER I

INTRODUCTION

This introductory chapter lays the groundwork for the study by presenting the rationale, research questions, and hypotheses guiding the analysis of Basel III's impact on banking performance. It emphasizes the importance of examining how different banking models—participation (Islamic) and deposit (conventional)—respond to Basel III regulations, particularly in terms of profitability, efficiency, liquidity, solvency, and risk management. The section also highlights the study's relevance in emerging markets and its contributions to academic literature and policymaking, while outlining the overall structure of the thesis.

1.1 Importance and Scope of the Study

The banking sector plays a critical role in global financial stability, economic growth, and risk management. The implementation of the Basel Accords, particularly Basel III, has fundamentally reshaped banking regulations by introducing stringent capital adequacy, liquidity, and risk management requirements. These reforms were developed in response to the 2008 global financial crisis to enhance banks' resilience against financial shocks, prevent systemic failures, and promote long-term economic stability. The significance of Basel III is particularly pronounced in emerging markets, where financial institutions operate under conditions of macroeconomic volatility and evolving regulatory environments (Toprak, 2001).

One of the critical aspects of Basel III is how it interacts with different banking models—particularly participation banks and deposit banks. Deposit banks, which follow conventional, interest-based financial principles, are structurally more compatible with Basel's traditional risk and capital frameworks. Participation banks, however, must comply with Shariah principles, such as the prohibition of riba (interest), reliance on profit-and-loss sharing contracts, and asset-backed financing. These differences can affect their ability to meet Basel III requirements, especially in areas like capital adequacy and liquidity risk management.

This study explores the compliance performance and financial outcomes of participation and deposit banks in the context of Basel III. It investigates whether the regulatory

transition has had a uniform effect across banking models or created distinct operational challenges. The analysis focuses on five key financial dimensions—profitability, efficiency, liquidity, solvency, and risk management—while also considering the role of macroeconomic factors such as inflation, interest rates, and total asset size.

By conducting a comparative analysis, this research provides valuable insights into the strengths and challenges faced by both participation and deposit banks under Basel III. The findings contribute to policy discussions on regulatory alignment, offering practical implications for regulators, practitioners, and financial institutions. Importantly, the study addresses a gap in the literature by offering robust, model-based evidence on the post-Basel III experiences of participation banks—institutions that have historically been underrepresented in global regulatory discourse. These findings are reinforced by previous work from Ergeç, Kaytancı, and Toprak (2014), who emphasize that the customer-driven, Shariah-compliant nature of Islamic banks in Türkiye necessitates differentiated supervisory treatment—an argument echoed in this study's evidence of distinct participation bank responses to regulatory pressures.

This research is particularly relevant in the context of financial institutions operating in emerging markets, where regulatory compliance, risk exposure, and financial performance are influenced by economic volatility and institutional factors. By analyzing Basel III's implications across different banking models, this study offers practical recommendations for banking practitioners, regulators, and policymakers seeking to balance financial stability with economic growth in diverse banking landscapes.

1.2 Research Questions and Hypotheses

The implementation of Basel III has introduced significant regulatory reforms aimed at strengthening financial stability, enhancing risk management practices, and ensuring adequate capitalization in the banking sector. However, the extent to which these regulations impact different banking models—particularly deposit and participation banks—remains a critical area of inquiry. Given the structural differences between these banking systems, it is essential to evaluate whether Basel III requirements affect their financial performance in a uniform manner or create disparities in compliance and resilience.

To address these concerns, this study seeks to answer the following research questions:

1. How has the implementation of Basel III affected the financial performance of banks in terms of profitability, efficiency, liquidity, solvency, and risk management?

2. Do participation banks and deposit banks exhibit different responses to Basel III regulations? If so, in which financial metrics are these differences most pronounced?

3. Has Basel III improved the capital adequacy and risk resilience of banks, or has it created additional constraints, particularly for participation banks?

To systematically evaluate these questions, the study develops the following hypotheses, each aimed at testing the relationship between Basel III implementation and key financial performance indicators:

H1: The implementation of Basel III has significantly affected the profitability of banks.

H2: The efficiency of banks has changed following Basel III implementation, with participation banks experiencing greater constraints due to their operational model.

H3: Basel III has a significant impact on liquidity management, with participation banks exhibiting a different liquidity structure compared to deposit banks.

H4: The solvency position of banks has improved under Basel III, but the extent of improvement differs between participation and deposit banks.

H5: Risk management practices have changed post-Basel III, with banks adjusting their provisioning, capital buffers, and off-balance sheet exposures.

H6: The impact of Basel III on financial performance varies based on macroeconomic factors, including inflation rates, interest rates, and total asset size.

These hypotheses will be tested using empirical models that incorporate key financial ratios and macroeconomic controls. By examining these relationships, the study aims to provide a comprehensive understanding of Basel III's role in shaping the financial stability and operational strategies of both banking models. The findings will contribute to regulatory discussions on whether Basel III aligns with the risk profiles and financial structures of participation and deposit banks, or if further policy adjustments are necessary to accommodate their unique characteristics.

1.3 Objectives and Contributions of the Study

The primary objective of this study is to assess the impact of Basel III regulations on the financial performance of the banking sector, with a particular emphasis on comparing deposit and participation banks. Given the structural differences between these banking models, the study examines whether Basel III has led to uniform improvements in financial stability or if it has imposed unique constraints on participation banks due to their compliance with Shariah principles. By analyzing key financial indicators such as profitability, efficiency, liquidity, solvency, and risk management, the research provides empirical insights into the effectiveness of Basel III in enhancing banking resilience. Additionally, it explores how macroeconomic factors, including inflation rates, interest rates, and asset size, influence financial performance under Basel III.

This study makes contributions to the literature on banking regulation and financial stability. While prior research has explored Basel III's effectiveness, this study offers a comparative analysis between deposit and participation banks, shedding light on whether the regulatory framework creates unintended challenges for interest-free financial institutions. The findings will provide valuable insights into whether participation banks face additional constraints, particularly in liquidity risk and capital adequacy, due to their distinct operational model. By integrating macroeconomic variables, the study also highlights the broader economic forces that shape financial stability in a post-Basel III environment.

Beyond academic contributions, the study has important policy implications. By identifying potential regulatory mismatches between Basel III and participation banking, it offers recommendations for policymakers to refine financial regulations to better accommodate different banking structures. The comparative approach provides financial institutions and regulators with a deeper understanding of how different banking models respond to capital adequacy and liquidity requirements. Through this, the study aims to enhance the effectiveness of banking regulations while ensuring financial stability and resilience across diverse banking systems.

1.4 Structure of the Thesis

This thesis is structured into several chapters, each addressing a crucial aspect of the study on the impact of Basel III regulations on banking performance and compliance, with a comparative focus on participation and deposit banks.

The first chapter introduces the study, outlining its significance, research questions, hypotheses, objectives, and theoretical framework. It sets the foundation by explaining the importance of Basel III regulations in banking stability and justifies the comparative approach between participation and deposit banks.

The second chapter presents a detailed literature review and conceptual framework. It discusses the evolution of the Basel Accords, highlighting key differences between Basel I, II, and III, and their implications for banking regulation. The chapter also explores stress-testing methodologies and the distinct characteristics of participation and deposit banking, emphasizing how regulatory compliance affects financial stability, risk-taking, and profitability.

The third chapter outlines the research methodology and data sources. It explains the econometric models, variables, and analytical techniques used to evaluate the impact of Basel III on financial performance indicators such as profitability, efficiency, liquidity, solvency, and risk management.

The fourth chapter provides an empirical analysis of the historical implementation of Basel regulations in Türkiye. It examines the regulatory transition from Basel I to Basel III, assessing its influence on the Turkish banking sector, including compliance trends and financial stability measures.

The fifth chapter presents the core findings of the study, offering a comparative analysis between participation and deposit banks. It evaluates key financial performance metrics, liquidity and solvency ratios, capital adequacy measures, and risk management strategies under Basel III. The chapter also includes an in-depth statistical analysis to determine how regulatory changes have differentially affected the two banking models.

The sixth chapter summarizes the findings and discusses their implications for policymakers, regulators, and banking institutions. It offers policy recommendations to

enhance regulatory alignment while ensuring financial stability in both banking models. The chapter also addresses the study's limitations and suggests directions for future research.

Finally, the seventh chapter presents the references, documenting the academic and regulatory sources that have contributed to the research.

CHAPTER II

LITERATURE REVIEW

This chapter provides a comprehensive review of the relevant literature on the evolution and implementation of the Basel Accords, particularly Basel III, and its implications for banking performance. It outlines the theoretical underpinnings of key regulatory reforms and discusses their practical application in both conventional and Islamic banking systems. The chapter begins by tracing the historical development of Basel I, II, and III, followed by a detailed examination of stress-testing mechanisms, the operational differences between deposit and participation banks, and the core performance metrics such as profitability, efficiency, liquidity, solvency, and capital adequacy. Through this, the review sets the conceptual foundation for the empirical analysis and highlights existing gaps in the literature that this study seeks to address.

2.1 Evolution of Basel I, II, and III

The Basel Accords, developed by the Basel Committee on Banking Supervision (BCBS), have undergone significant evolution. Basel I (1988) introduced standardized credit risk assessments, while Basel II (2004) expanded the framework to include operational and market risks, aiming for greater risk sensitivity. Basel III (2010) emerged as a response to the 2008 financial crisis, emphasizing liquidity and leverage through measures like the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) (Le et al., 2020; Li, 2022). According to the findings from Bangladesh, the adoption of Basel III has had a positive impact on the capital adequacy of banks, significantly enhancing their stability (Tipu, 2019). In Bangladesh, the introduction of Basel III led to banks maintaining higher capital ratios, which is in line with global trends observed in conventional banks (Tipu, 2019)

Islamic banks, governed by Sharia principles, face additional complexities in implementing Basel standards. The Islamic Financial Services Board (IFSB) has adapted Basel guidelines to account for Islamic banks' unique features, such as displaced commercial risk and Sharia non-compliance risk. Despite these challenges, studies highlight that Basel compliance enhances financial stability for both conventional and

Islamic banks, albeit to varying degrees (Hussain & Muhammad, 2022; Masole, 2023). For instance, Hussain and Muhammad (2022) found that Basel III regulations positively impact the performance and efficiency of Islamic banks, narrowing the performance gap between them and conventional banks. Tipu (2019) found that in Bangladesh, the implementation of Basel III had a direct effect on profitability and capital adequacy, which narrowed the performance gap between conventional and Islamic banks, especially in terms of liquidity and solvency.

2.2 Stress Testing: Definitions, Types, and Objectives

Stress testing is essential under Basel III, aimed at evaluating the resilience of financial institutions by simulating adverse scenarios. It includes scenario analysis, sensitivity testing, and reverse stress testing to assess capital adequacy and liquidity. For Islamic banks, the reliance on profit-and-loss sharing and asset-backed financing complicates liquidity risk modeling, which makes stress testing even more critical (Kader Malim, 2015; Bashir, 2018). Islamic banks, particularly in countries like Türkiye, face unique challenges in meeting Basel III's requirements, given their distinctive financial structures.

The compliance performance of Basel Accords in Islamic banks, when compared to conventional banks, reveals several challenges and differences. While Basel III regulations provide a solid framework for ensuring financial stability, Islamic banks often face difficulties in adhering to these regulations due to their reliance on Sharia-compliant products that do not always align with Basel's liquidity and capital adequacy measures. Conventional banks, on the other hand, have more flexibility in their capital management, as they rely on interest-based instruments that fit within the existing Basel guidelines (Bashir, 2018). These differences underscore the need for tailored regulatory frameworks to ensure that both types of banks can comply with Basel III while maintaining their distinct financial models.

The effective implementation of stress-testing frameworks is essential for both Islamic and conventional banks to ensure regulatory compliance. For Islamic banks, this requires adapting stress-testing models that account for unique risks such as Sharia non-compliance and asset liquidity. In countries like Türkiye, where both types of banks operate side by side, ensuring that stress testing is appropriately tailored for both Islamic and conventional banks will be critical in enhancing financial stability across the banking system (Bashir & Hassan, 2017; Kader Malim, 2015). This approach will be fundamental for ensuring the sustainable growth of participation banking while also ensuring that conventional banks maintain their compliance with Basel III standards.

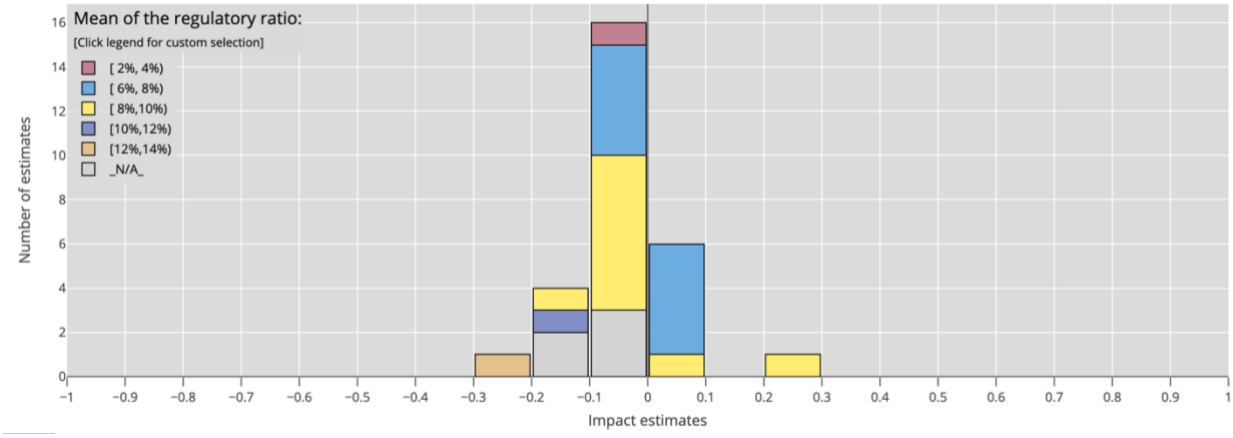


Figure 2.1: Graph showing the distribution of the effect of banks' capital ratio being 1pp higher on GDP. Based on 28 standardized estimates from 8 studies.

Source: BIS, 2025

Basel III's Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) are designed to ensure that banks maintain sufficient liquidity during financial stress. According to global liquidity estimates, these regulations have proven effective in deposit banks, but Islamic banks face greater challenges due to the limited availability of Sharia-compliant high-quality liquid assets (HQLA). The impact of banks' capital ratio on GDP estimates, based on standardized data from eight studies, reveals significant differences in the performance of Islamic and deposit banks under Basel III compliance (BIS, 2025). Figure-1 illustrates the distribution of the effect of banks' capital ratio being 1pp higher on GDP, based on 28 standardized estimates from these studies.

According to Veeramoothoo and Hammoudeh (2022), studies on U.S. banks have shown that while the liquidity coverage ratio (LCR) and net stable funding ratio (NSFR) positively impact profitability, the magnitude of their effects on bank profitability is relatively small across different profitability quantiles. Their study suggests that these liquidity regulations primarily affect smaller banks differently compared to larger banks, as small banks are more vulnerable to short-term liquidity risks (LCR), while large banks are more exposed to medium- and long-term liquidity risks (NSFR). This finding is particularly useful when examining the liquidity challenges that Islamic banks face in Türkiye, where the availability of Sharia-compliant high-quality liquid assets (HQLA) may influence their ability to comply with Basel III's liquidity requirements (Veeramoothoo & Hammoudeh, 2022).

2.3 Distinctive Features of Participation vs. Deposit Banking

Participation banks differ from deposit banks in their fundamental approach, adhering strictly to Sharia principles. One key distinction is the prohibition of interest (riba) and speculative transactions (gharar) in participation banking. These principles directly influence participation banks' balance sheets and their risk management practices. While deposit banks primarily rely on debt-based models, participation banks use profit-sharing models such as Musharakah and Mudarabah, and asset-backed financing methods like Ijarah and Murabaha. These contracts ensure that transactions are linked to real economic activities, offering a more equitable risk-sharing approach compared to deposit banking (Malim, 2015; Bashir, 2018).

The IMF's analysis of Basel compliance in participation banks reveals that although these institutions maintain high capital adequacy ratios, they face significant challenges in liquidity management. This is particularly due to the limited availability of Sharia-compliant high-quality liquid assets (HQLA), which affects their ability to meet Basel III requirements like the Liquidity Coverage Ratio (LCR). Despite these challenges, studies show that Basel compliance can enhance the stability of participation banks, though the magnitude of the effect tends to be less pronounced than for deposit banks (Bashir, 2018; Kader Malim, 2015). This underscores the importance of tailored regulations, such as the

IFSB's Core Principles for Islamic Finance Regulation (CPIFR), which adapt Basel standards to the operational realities of Islamic finance.

Participation banks' distinct features necessitate a more tailored regulatory framework, especially in areas such as liquidity management and compliance with Sharia principles. Regulatory bodies like the IFSB have developed additional guidelines to address these challenges, ensuring that Islamic banks remain stable while adhering to Sharia law (Kahf, 2005). By aligning Basel standards with the specific risks associated with Islamic financial products, these frameworks contribute to the long-term stability and growth of participation banks (Malim, 2015).

2.4 Measuring and Comparing Banking Performance: Profitability and Efficiency

The comparative assessment of banking performance in Islamic and conventional systems has focused primarily on profitability and efficiency dimensions. Ramlan and Adnan (2016) found that while conventional banks in Malaysia showed higher deposits-to-assets and equity-to-assets ratios, Islamic banks outperformed in terms of total loan-to-assets. They also revealed that ROE in conventional banks was primarily driven by equity ratios, whereas Islamic banks' profitability was more sensitive to equity-to-asset relationships, highlighting differences in capital deployment strategies.

Expanding the methodological approach, Haque et al. (2020) employed both financial ratios and Data Envelopment Analysis (DEA) in Saudi Arabia, discovering that conventional banks had higher ROA, while Islamic banks recorded stronger ROE. However, DEA scores showed conventional banks to be more operationally efficient overall. This disconnect between profitability indicators and DEA results suggests the need for integrated evaluation techniques to capture a full picture of banking performance.

Siraj and Pillai (2012) similarly observed that Islamic banks in the GCC region demonstrated stronger operational efficiency, indicated by a higher operating profit ratio (62% vs. 46%). Although conventional banks recorded a slightly higher net profit ratio, Islamic banks showed better asset utilization through higher ROA. These results affirm the operational resilience of Islamic banks during financial downturns, such as the 2008 crisis.

In Bangladesh, Paul et al. (2013) revealed that conventional banks outperformed Islamic banks in profitability during most of the 2008–2012 period. However, Islamic banks improved over time, surpassing conventional banks in ROE and Profit Expense Ratio in later years. The initially observed performance gap narrowed due to improved capital allocation and cost management in Islamic banks.

The question of efficiency remains contested. Rashwan and Ehab (2016), in a cross-country study, found that conventional banks were more efficient overall, particularly in cost and profit dimensions. Islamic banks showed comparable revenue efficiency but were constrained by higher operational costs tied to Sharia compliance. Notably, efficiency had a greater impact on profitability metrics in Islamic banks, indicating their heightened sensitivity to internal performance dynamics.

A Pakistan-based study by Saeed et al. (2013) using DEA and ratio analysis found that conventional banks outperformed Islamic banks in technical and scale efficiency. Islamic banks, while better than public and foreign banks, showed scale inefficiencies, suggesting room for structural adjustments. Nonetheless, their managerial efficiency remained relatively strong, reflecting competent internal governance.

Similarly, Bader et al. (2007) examined cost, revenue, and profit efficiency across 80 banks in 21 countries, concluding that there were no significant efficiency differences between Islamic and conventional banks. They emphasized that institutional context, rather than banking model alone, drives efficiency, with Middle Eastern Islamic banks outperforming their Asian and African counterparts.

Miah and Uddin (2017) added further nuance by highlighting a trade-off between cost efficiency and stability. In their study of GCC banks, conventional banks were more cost-efficient, while Islamic banks exhibited greater resilience during financial shocks. They also found that larger bank size and capital structure influenced efficiency, with Islamic banks benefiting from consolidation to improve scale economies.

In sum, while conventional banks generally perform better on cost and technical efficiency measures, Islamic banks show competitive, and in some cases superior, performance in equity-based profitability and operational resilience. The literature consistently

underscores the influence of institutional scale, capital structures, and risk-sharing models on the profitability-efficiency nexus in both banking systems.

2.5 Measuring and Comparing Banking Performance: Liquidity and Solvency

Comparative studies have extensively analyzed how Islamic and conventional banks manage liquidity and solvency under different financial and regulatory environments. Iqbal (2012) found that Islamic banks in Pakistan demonstrated stronger liquidity positions—higher cash-to-assets ratios, lower non-performing loans (NPLs), and higher capital adequacy ratios (CAR)—than conventional banks. These outcomes suggest that Islamic banks adopt more conservative liquidity management due to their asset-backed and Sharia-compliant financing models.

Expanding this comparison, Muharam and Kurnia (2013) examined Indonesian banks and reported that Islamic banks' liquidity risk was primarily influenced by return on assets (ROA), while conventional banks were more sensitive to CAR and return on equity (ROE). They also highlighted that net interest margin (NIM) significantly affected liquidity risk in Islamic banks but not in conventional ones, reflecting the differing profit structures of both models.

Similarly, Gafrej and Abbes (2017) analyzed banks from 20 countries and found that Islamic banks maintained higher liquidity buffers, especially during financial crises. For Islamic banks, liquidity was positively associated with ROA and capital ratios, whereas for conventional banks, liquidity was more negatively impacted by capital adequacy and loan growth. These differences point to the cautious asset allocation strategies employed by Islamic banks under Shariah principles.

Musa et al. (2021) further explored these dynamics in Europe, revealing that capital adequacy had a 5.4 times stronger impact on liquidity for Islamic banks compared to conventional banks. This finding emphasizes the structural reliance of Islamic banks on internal capital due to limited access to interest-based funding instruments, underscoring the need for alternative liquidity tools tailored to Islamic finance.

On the solvency side, Kattel (2014) used the Bankometer model to assess Nepalese banks and concluded that private banks showed better solvency strength than joint ventures,

particularly in capital structure and asset quality. Despite all banks remaining solvent, the study emphasized the utility of solvency tools in preventing financial distress.

Zuardi (2021) offered a focused case study on PT Bank Central Asia Syariah, showing robust CAR levels well above regulatory thresholds, but unsustainably high debt-to-equity ratios, highlighting that solvency challenges can still emerge despite strong capital buffers if leverage is poorly managed.

Fikri and Yolanda (2023) reinforced this view by demonstrating that both liquidity and solvency ratios have a strong positive influence on financial performance. Their findings confirm the interdependence of short-term liquidity and long-term solvency planning, stressing the need for balance in risk management strategies.

Lastly, Nawayiseh et al. (2024) examined Jordanian banks and found that while liquidity had a negative relationship with profitability, moderate solvency—measured by the debt-to-equity ratio—enhanced returns. These findings underline the importance of leveraging debt efficiently while maintaining sufficient liquidity to avoid performance trade-offs.

2.6 Measuring and Comparing Banking Performance: Capital Adequacy and Risk Management

Capital adequacy and risk management are central pillars of banking performance and resilience, especially under Basel frameworks. Several studies emphasize how internal efficiency, bank size, and risk governance significantly influence Capital Adequacy Ratio (CAR). Islam (2014) analyzed AB Bank Limited in Bangladesh and found it consistently met regulatory CAR requirements, driven mainly by strong core capital, though its supplementary capital remained weak. Similarly, Bateni et al. (2014) showed that in Iranian private banks, CAR was positively affected by internal performance indicators like ROA, ROE, and equity ratios, while larger banks tended to hold lower capital buffers, reflecting a risk-taking bias. These findings align with Hafez (2018), who, using DEA and regression analysis on Egyptian banks, concluded that post-crisis Islamic banks demonstrated stronger efficiency-CAR relationships than their conventional peers, revealing improved capital management and risk resilience. El-Ansary et al. (2019), in their MENA-based comparative study, added that while profitability significantly influenced CAR in conventional banks, Islamic banks' CAR was more sensitive to size,

operational efficiency, and GDP growth. These differences underscore the necessity for differentiated capital regulation across banking models, especially given the structural constraints Islamic banks face under Shariah-compliant finance.

Risk management practices, closely tied to capital adequacy, vary substantially between Islamic and conventional banks due to differences in operational models. Ahmed (2015) highlights that Islamic banks face unique risks—such as displaced commercial risk and equity investment risk—stemming from profit-and-loss sharing modes. These risks necessitate specialized frameworks beyond conventional approaches. Rahman et al. (2015) support this, noting that while conventional banks in Bangladesh adopt more advanced risk tools, Islamic banks tend to use traditional methods, often due to limitations in expertise. Nonetheless, both systems recognize the vital role of capital adequacy and risk mitigation in sustaining performance. Hassan et al. (2016) echo this in the Pakistani context, finding that both bank types maintain formal risk departments, but Islamic banks still require further institutional development, especially in credit risk and automation.

Recent empirical evidence further reinforces the nuanced relationship between risk management and performance. Chong and Syed Ali (2024) observed in Malaysian banks that CAR and non-performing loans negatively impacted profitability, particularly in Islamic banks, which are less sensitive to NPLs but more constrained by capital buffers. Khayati (2024), focusing on Bahrain, also found that higher capital and NPL ratios suppressed returns in both bank types, while liquidity risks had limited influence. Interestingly, efficiency was negatively associated with profitability, suggesting that excessive cost-cutting may reduce value creation. These results highlight the need for bank-specific risk strategies that balance capital adequacy with profitability, especially for Islamic banks operating within asset-backed and non-interest financial frameworks.

2.7 Impact of Basel III on Bank Risk-Taking and Profitability

Gabr and Elbannan (2018) examine the impact of Basel II and Basel III on the risk-taking behavior and profitability of banks in several Asian countries, offering important insights into the broader implications of Basel compliance. Their study highlights that stricter capital regulations reduce risk-taking but have a negative impact on profitability for banks, particularly in emerging markets. In contrast, while conventional banks are able to use

more flexible instruments to comply with Basel III, Islamic banks face unique challenges in implementing these regulations due to their reliance on Sharia-compliant financial products. This difference in regulatory compliance impacts profitability and risk management for both sectors, which may suggest the need for tailored frameworks that accommodate the specific operational models of Islamic banks (Gabr & Elbannan, 2018).

The Basel III framework significantly impacts various aspects of bank performance, including risk-taking and profitability. A study by Rizvi et al. (2018) examined the effect of Basel III on the credit risk and interest rate risk of banks in India, emphasizing that the high capital adequacy requirements introduced under Basel III can lead to increased gross non-performing assets (GNPAs) and net interest margins (NIMs). These findings suggest a trade-off, where higher capital requirements reduce the bank's ability to lend and increase the interest rate spreads as banks adjust to meet stricter liquidity and capital standards (Rizvi, Kashiramka, & Singh, 2018). Similarly, the impact of Basel III on European banks reveals that an increase in the Tier 1 capital ratio under Basel III has been linked with higher levels of profitability, as stronger capital buffers reduce the potential for liquidity crises and improve market stability (Gabriel, 2016). However, this increased profitability is often offset by the elevated costs associated with holding larger capital buffers, which could negatively affect lending activities in the short term (Gabriel, 2016).

2.8 The Broader Impact of Basel III on Banking Stability and Credit Allocation

The implementation of Basel III regulations has significantly influenced banking performance, particularly in capital adequacy, profitability, and lending behavior. Studies have explored these effects across different banking sectors and economies, revealing both benefits and challenges associated with stricter regulatory requirements. In the Egyptian banking sector, Zaky and Soliman (2017) analyzed the impact of Basel III announcements on financial performance, highlighting a positive correlation between regulatory changes and financial stability. Their study found that while banks initially faced increased compliance costs, the enhanced capital buffers ultimately strengthened financial resilience, leading to improved investor confidence and reduced systemic risk. However, they also noted that smaller banks struggled to meet the stringent capital requirements, leading to potential constraints on their lending capabilities.

Similarly, Tipu (2019) examined the adoption of Basel III in Bangladesh, focusing on private commercial banks' profitability and capital adequacy. The findings suggest that higher capital requirements under Basel III led to an increase in capital-to-risk-weighted asset ratios, ensuring stronger financial stability. However, the study also pointed out that compliance with these regulations resulted in higher capital holding costs, which had a dampening effect on return on equity (ROE) and return on assets (ROA). The research further highlighted that while Basel III implementation narrowed the performance gap between different generations of banks, second and third-generation banks adapted more effectively due to their pre-existing capital buffers and robust risk management frameworks.

In the South African context, Sibande and Milne (2025) investigated the impact of Basel III implementation on bank lending. Their study, based on a panel regression analysis of major South African banks, found limited evidence that increased capital requirements negatively affected credit supply. Unlike in some emerging markets, South African banks had already maintained capital buffers above the regulatory minimums, allowing them to absorb new capital requirements without significantly reducing lending. However, their findings indicated that changes in capital requirements had more pronounced effects on lending to non-financial corporations than on household lending, suggesting that corporate borrowers faced relatively tighter credit conditions post-Basel III. This underscores the varying effects of regulatory adjustments across different market segments, emphasizing the need for tailored approaches in capital regulation.

Overall, the literature suggests that Basel III has played a crucial role in enhancing financial stability, but its impact varies depending on banking structures, capital buffers, and economic conditions. While some banking sectors experienced initial constraints on profitability and lending, the long-term effects have generally supported resilience and risk mitigation, particularly in well-capitalized banking environments.

CHAPTER III

METHODOLOGY AND DATA

To rigorously assess the impact of Basel III regulations on the financial performance and compliance behavior of deposit and participation banks in Türkiye, a well-structured methodological framework is essential. The empirical design of the study is grounded in regression analysis for 23 different ratios, allowing for a comprehensive evaluation of changes across pre- and post-Basel III periods. Key financial performance dimensions—including profitability, efficiency, liquidity, solvency, capital adequacy, and risk management—are systematically analyzed through carefully selected financial ratios. Furthermore, the analysis controls for relevant macroeconomic variables to ensure the robustness of the results. The subsequent sections present the research strategy, data sources, variables employed, and statistical techniques applied, providing a transparent and empirically sound foundation for the findings discussed in later chapters.

3.1 Research Methods and Approaches

This study employs an empirical research approach using regression data analysis to examine the impact of Basel III regulations on the financial performance of the banking sector and participation banks in Türkiye. By utilizing a structured set of financial ratios, the research evaluates trends before and after Basel III implementation, distinguishing between deposit and participation banks. The analysis focuses on six key financial dimensions: profitability, efficiency, liquidity, solvency, capital adequacy, and risk management.

A regression model is applied to assess the effects of Basel III regulations while controlling for macroeconomic variables such as inflation rate (INF), interest rates (INTR), and total banking sector assets (ASSET). OLS models are utilized to ensure robustness, and the statistical significance of Basel III's influence on banking performance is tested using various regression specifications.

3.2 Data Sources

The study relies on secondary data collected from reliable regulatory and financial institutions covering the period from 2003 to 2024**.** The primary data sources include:

- **The Central Bank of the Republic of Türkiye (CBRT - TCMB):** Provides key macroeconomic indicators, including interest rates, and financial stability reports. Interest rates and inflation rates are obtained from the CBRT EVDS database.
- **The Banking Regulation and Supervision Agency (BRSA - BDDK):** Offers monthly and annual reports on banking sector performance, including financial stability, risk exposure, and compliance with Basel III. Ratios for the banking sector and participation banks are derived from BRSA's monthly advanced data analysis reports.
- **The Banks Association of Türkiye (TBAT - TBB):** Publishes statistical data on banking activities, financial statements, and sector-wide trends for deposit banks. The total asset values of each deposit bank in the sector are obtained from TBAT.
- **The Participation Banks Association of Türkiye (PBAT - TKBB):** Provided financial performance data for participation banks total assets by year. The total asset values of each participation bank in the sector are obtained from PBAT.
- **Banks' Annual Reports:** Liquidity Coverage Ratio (LCR) and Leverage Ratio values are obtained from the annual reports of the ten largest deposit banks and all participation banks. For both banking segments, these values are weighted according to each bank's total asset size to ensure an accurate representation of sector-wide trends.

The dataset includes both monthly and yearly observations to capture short-term and long-term trends in the financial performance of banks. The data covers a pre-Basel III period (2003-2014) and a post-Basel III period (2015-2024) to evaluate the regulatory impact on various financial indicators. The study examines six categories of financial ratios, as detailed in the table below:

Table 3.1: Ratios Used in Model and Their Significance

Category	Financial Ratio	Significance
Profitability Ratios	Net Income / Average Total Assets (ROA)	Measures how efficiently banks use their assets to generate profit.
	Net Income / Average Shareholder's Equity (ROE)	Evaluates return on shareholder investment.
	Net Profit Margin	It is the percentage of profit a company produces from its total revenue
	Net Interest (Profit) Revenues / Average Total Assets	Assesses income generation from lending activities.
	Fees, Commission and Banking Services Revenues / Total Revenues	Indicates reliance on non-interest income sources.
Efficiency Ratios	Operational Expenses / Average Total Assets	Measures cost efficiency in managing assets.
	Fees, Commission and Banking Services Revenues / Operational Expenses	Evaluates banks' ability to cover operational costs with non-interest income.
	Average Total Assets / Average Number of Total Staff	Assesses workforce efficiency in managing bank assets.
	Operating Expenses / Total Revenue	Reflects operational cost efficiency.
Liquidity Ratios	Total Cash Loans / Total Deposit (Funds Collected)	Measures banks' ability to cover deposits with cash loans.
	Demand Deposit / Total Deposit	Assesses the proportion of short-term deposits.
	Interest Sensitive Assets With Maturity of 3 Months / Interest Sensitive Liabilities With Maturity of 3 Months	Evaluates short-term asset-liability management.
	Liquidity Requirement Ratio	Ensures banks maintain adequate short-term liquidity buffers.
Solvency Ratios	Weighted Average Maturity of Securities	Assesses banks' investment maturity profile.
	Total Securities / Total Deposit	Measures the proportion of deposits allocated to securities.
	Debt to Equity Ratio	Evaluates financial leverage and stability.
	Equity Ratio (%)	Measures the proportion of equity financing in total capital.
Capital Adequacy Ratios	Regulatory Capital / Total Risk Weighted Assets	Reflects banks' ability to absorb financial shocks.
	Core Capital Adequacy Ratio	Measures the proportion of core capital against risk-weighted assets.
	Total Risk Weighted Assets (Net) / Total Risk Weighted Assets (Gross)	Indicates the proportion of adjusted risk assets.
Risk Management Ratios	Non-Performing Loans (Gross) / Total Cash Loans	Measures the quality of bank lending portfolios.
	Provision for Non-Performing Loans / Gross Non-Performing Loans	Evaluates the adequacy of loan loss provisions.
	Off-Balance Sheet Risks / Total Assets	Indicates exposure to contingent liabilities.

Source: Author, 2025

It is important to note that the majority of the financial ratios used in this study are obtained directly from BDDK (Banking Regulation and Supervision Agency), which publishes aggregated ratios for both deposit and participation banks on a monthly and annual basis. These ratios reflect sector-wide averages rather than individual bank-level data. The Liquidity Coverage Ratio (LCR), however, is not directly provided by BDDK in the same format. For this metric, data were manually collected from the annual reports of banks. Specifically, the LCR for participation banks was calculated using figures from all institutions in this category, while for deposit banks, the calculation was based on the ten largest banks by asset size. In both cases, a weighted average approach was applied using each bank's total assets to ensure representative sector-level LCR values.

3.3 Analytical Techniques and Tools

To assess the impact of Basel III on key financial indicators, the study utilizes regression analysis, a robust econometric technique suitable for analyzing longitudinal data involving multiple entities over time. The specified regression model is as follows:

$$Y_{it} = \alpha + \beta_1 \text{BaselIII}_{it} + \beta_2 \text{INTR}_{it} + \beta_3 \log(\text{ASSET}_{it}) + \beta_4 \text{INF}_{it} + \varepsilon_{it}$$

where:

- $\mathbf{Y_{it}}$ denotes the financial performance indicator under analysis (e.g., profitability, efficiency, liquidity, solvency, capital adequacy, or risk management ratios).
- **BaselIII** is a binary dummy variable equal to 0 for periods before 2015 and 1 for periods from 2015 onward, representing the implementation phase of Basel III regulations.
- **INTR** represents interest rates, capturing the cost of borrowing and its effect on financial operations.
- **log(ASSET)** denotes the natural logarithm of total bank assets, included to control for scale effects and reduce skewness in size-related variables.
- **INF** represents the year-on-year percentage change in the Consumer Price Index (CPI) on a monthly basis, used as a proxy for inflation.
- $\boldsymbol{\varepsilon_{it}}$ is the error term, capturing unobserved shocks.

The dummy specification of BaselIII allows for a clear distinction between the pre- and post-regulatory periods, and the logarithmic transformation of ASSET helps stabilize variance and improve model linearity.

The study applies both OLS models to account for unobserved heterogeneity across banks and over time.

Estimation is performed using R Studio, ensuring transparency, replicability, and access to advanced diagnostic tools. The following statistical tests and procedures are conducted to ensure the validity and robustness of the regression results:

- Multicollinearity diagnostics using the Variance Inflation Factor (VIF) to ensure that the independent variables do not exhibit excessive correlation.
- Heteroskedasticity testing using the Goldfeld–Quandt test to detect non-constant variance in the residuals.
- Normality of residuals assessment via the Shapiro–Wilk test to verify the assumption of normally distributed errors.
- Linearity assessment through the RESET (Regression Specification Error Test) to check for correct functional form.
- Robust standard errors (using heteroskedasticity-consistent estimators) are applied where heteroskedasticity is detected to ensure accurate inference.
- Statistical significance is evaluated at the 1%, 5%, and 10% levels to determine the reliability and strength of the estimated coefficients.

This methodological framework provides a comprehensive and statistically sound approach to examining how Basel III regulations have influenced financial stability and performance across both deposit and participation banks in Türkiye.

CHAPTER IV

RESULTS AND DISCUSSION

In this section, the Basel regulatory frameworks and their implementation in Türkiye are discussed in detail. The analysis begins with a comparison of descriptive statistics for participation and deposit banks, followed by an evaluation of the compliance levels with Basel III standards across both banking models. Furthermore, the impact of Basel III on various performance indicators is assessed through regression analysis. To provide a concise overview of the key regulatory developments, the following table summarizes the core features and numerical thresholds of Basel I, II, and III accords:

Table 4.1: Summary of Basel Accords

Feature	Basel I (1988)	Basel II (2004)	Basel III (2010–2019)
Main Focus	Credit Risk	Credit, Market, Operational Risk	All Basel II risks + Liquidity, Leverage, Procyclicality
Total Capital Ratio	8%	8%	8% + Buffers (up to 13%)
Tier 1 Capital	≥ 4%	≥ 4%	CET1 ≥ 4.5%
Tier 2 Capital	≤ 100% of Tier 1	≤ 100% of Tier 1	≤ 100% of Tier 1
Capital Conservation Buffer	–	–	2.5%
Countercyclical Buffer	–	–	0%–2.5%
Leverage Ratio	–	–	≥ 3%
LCR / NSFR (Liquidity Ratios)	–	–	Yes (LCR ≥ 100%, NSFR ≥ 100%)
Risk Weights	Fixed (0%–100%)	Standardised & IRB Approaches	Enhanced credit risk + stressed scenarios
Operational Risk	Not included	BIA, SA, AMA	Simplified SMA replaces AMA
Market Discipline (Pillar 3)	–	Introduced	Strengthened disclosure

Source: BIS, 2025

As seen in the table above, the Basel regulations have progressively evolved in scope and stringency. While Basel I focused primarily on credit risk and introduced basic capital

requirements, Basel II expanded the framework to include operational and market risk, along with enhanced supervisory and disclosure requirements. Basel III significantly tightened capital adequacy standards, introduced new buffers and leverage constraints, and addressed liquidity risk through the LCR and NSFR ratios. These regulatory enhancements aim to strengthen the resilience of banking systems, particularly in response to the global financial crises, and form the basis for evaluating the compliance and performance of Turkish banks in the subsequent sections.

4.1 History of Basel Accords in Türkiye

Table 4.2: Historical Timeline of Basel in Türkiye

Year	Event
1988	Basel I Introduced - Türkiye begins aligning regulations.
2001	Post-2001 Financial Crisis Reforms - Strengthened banking regulations, BRSA established.
2005	Banking Act No. 5411 Enacted - Legal foundation for Basel compliance.
2006	Basel II Implementation Begins - Capital adequacy and market risk rules introduced.
2007	Operational Risk Measurement Adopted – Basel II requirements for operational risk implemented.
2010	Quantitative Impact Study (QIS-TR3) Results – Basel II implementation reduced the consolidated capital adequacy ratio from 18.35% to 16.95%
2011	Parallel Run for Basel II - Turkish banks apply Basel II alongside existing rules.
2012	Full Basel II Adoption - Credit risk standardized approach and Pillar 3 disclosure.
2013	Basel III Implementation - Strengthened capital adequacy, LCR, and countercyclical buffers.
2014	Pillar 2 and Internal Ratings-Based (IRB) Approach Introduced – Additional Basel III amendments implemented, including enhanced risk coverage.
2015	Final Basel III Adjustments – New rules on Own Funds, Countercyclical Buffers, and Profit Distribution to align with Basel III requirements - The minimum requirement for LCR was set at 60 percent in 2015 and it will reach 100 percent in 2019 with 10 points increase annually.
2016	RCAP Assessment – Basel Committee on Banking Supervision (BCBS) conducted an assessment and rated Türkiye's Basel III implementation as compliant

Source: TCMB, 2017

Türkiye's adoption of the Basel Accords began in 1999, with the implementation of Basel I. The primary focus of Basel I was capital adequacy requirements, specifically the Tier 1 capital ratio, which became crucial after the 1994 Turkish financial crisis. This crisis exposed the vulnerabilities in the banking system, emphasizing the need for a robust regulatory framework. The Banking Regulation and Supervision Agency (BRSA) played a pivotal role in aligning the Turkish banking system with international standards by

implementing Basel I, which set a minimum capital adequacy ratio of 8%, requiring banks to maintain at least 4% in core (Tier 1) capital relative to their risk-weighted assets (RWA).

In 2007, Türkiye transitioned to Basel II, which expanded on the Basel I framework by introducing more sophisticated capital adequacy measures. Basel II focused on risk-sensitive capital requirements, addressing not only credit risk but also market and operational risks. This was a significant leap in Türkiye's financial stability efforts and brought the Turkish banking system closer in line with European Union regulations. The BRSA, alongside the Central Bank of Türkiye (CBRT), took the lead in this transition, aligning the banking sector with Basel II's more complex, risk-weighted approach. Turkish banks fully implemented Basel II by 2012, with substantial improvements in their risk management practices and reporting standards. This included the introduction of the Internal Ratings-Based (IRB) approach for more precise assessment of credit risk, as well as new operational and market risk models. However, challenges arose due to the increased complexity of Basel II's capital adequacy calculations, leading to higher compliance costs, particularly for smaller banks. Moreover, during the implementation period, Turkish banks found themselves struggling with issues related to pro-cyclicality and reliance on external credit ratings.

The 2008 global financial crisis highlighted the limitations of Basel II, especially in addressing liquidity risks. This prompted Türkiye to begin the implementation of Basel III in 2015, aiming to strengthen capital and liquidity requirements. Basel III introduced stricter measures, such as the Common Equity Tier 1 (CET1) ratio, set at a minimum of 4.5%, as well as liquidity requirements including the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR). Türkiye adopted Basel III on a phased basis, beginning with the introduction of the LCR at 60% in 2015, gradually increasing to 100% by 2019. Participation banks, which operate according to Sharia-compliant principles, faced additional challenges in adhering to these liquidity requirements due to the limited availability of Sharia-compliant liquid assets. However, the BRSA allowed for some flexibility, enabling these banks to meet Basel III's liquidity standards through supplementary measures.

Türkiye's banking sector, by the end of 2019, had made significant progress in aligning with Basel III, achieving notable improvements in capital adequacy, liquidity management, and risk assessment. By 2019, the average Capital Adequacy Ratio (CAR) of Turkish banks was reported at 15.5%, a clear indication of their resilience in the face of macroeconomic volatility. Despite these advancements, the regulatory framework remained a dynamic area, continually adapting to emerging global financial standards, especially concerning Islamic banking principles and the complexities of Sharia-compliant liquidity management.

4.2 Adoption of Basel I in Türkiye's Banking System

Türkiye adopted Basel I in 1999 as part of a broader effort to modernize and stabilize the Turkish banking sector following the 1994 banking crisis. The Banking Regulation and Supervision Agency (BRSA) issued the BRPD Circular No. 01/1999, which aligned Türkiye's banking system with international standards on capital adequacy. The framework required banks to maintain a minimum capital adequacy ratio of 8%, with at least 4% in Tier 1 capital (core capital) relative to their risk-weighted assets (RWA). Basel I, primarily focusing on credit risk, marked the beginning of Türkiye's regulatory alignment with global financial markets.

The implementation of Basel I began in 1999, and Turkish banks were required to comply with the regulations by 2002. The Turkish banking sector faced challenges related to interest rate risks and exchange rate volatilities, which were not adequately addressed by Basel I's capital adequacy framework. However, the BRSA adopted Basel I to improve the overall capital framework and ensure the stability of the banking sector during periods of macroeconomic uncertainty.

The adoption of Basel I also led to the development of new regulations for the calculation of risk-weighted assets (RWA). The risk weights were largely based on credit risk, which was the primary concern in developed countries at the time. However, Türkiye's systemic banking crises (notably the 2000-2001 financial crises) revealed that institutional risks and macroeconomic shocks, such as exchange rate fluctuations, were more significant risks to the Turkish banking system than credit risk alone. This was a major challenge for the

adoption of Basel I, as the framework did not fully address these systemic risks (Ersoy, 2003).

By the end of 2002, Türkiye's banks were fully compliant with Basel I's capital adequacy requirements, though the regulatory framework continued to evolve with the development of Basel II and later Basel III, which addressed the broader risks faced by Turkish banks.

4.3 Adoption of Basel II in Türkiye's Banking System

Türkiye adopted Basel II in 2007 to enhance financial stability and strengthen risk management in the banking sector. The Banking Regulation and Supervision Agency (BRSA), along with the Central Bank of the Republic of Türkiye (CBRT), led the regulatory alignment process to transition from Basel I's simpler framework to Basel II's more complex, risk-sensitive approach. Basel II was officially implemented by July 2012, following a long transition period to ensure compliance. Here are key Features of Basel II Implementation in Türkiye:

- **Risk-Sensitive Capital Requirements**: Basel II introduced internal ratings-based (IRB) methods, allowing banks to assess credit risk more precisely. Unlike Basel I, this approach was more tailored and aligned with banks' actual risk profiles.
- **Supervisory Review**: The BRSA developed new regulatory guidelines for assessing capital adequacy, focusing on credit risk, market risk, and operational risk management. This also helped enhance the overall risk management practices of Turkish banks (Central Bank of Türkiye, 2005).
- **Market Discipline**: Basel II mandated improved financial disclosures, requiring Turkish banks to enhance their transparency in risk exposure and capital adequacy, thereby increasing market discipline.

Challenges:

- **Infrastructure Readiness**: Turkish banks faced challenges in upgrading their risk management systems to comply with the new credit risk models and regulatory standards. This raised compliance costs, especially for smaller banks.

- **Reliance on External Ratings**: Basel II's dependence on external credit ratings posed challenges for Turkish banks, as the framework led to inconsistencies in risk assessments during times of economic volatility.
- **Pro-Cyclicality Risks**: Basel II was criticized for amplifying financial cycles, as the framework could lead to capital shortages during economic downturns, particularly during the 2008 global financial crisis (Caruana, 2005).

By 2012, approximately 85% of Turkish banking assets were in compliance with Basel II's capital requirements (CBRT, 2023). The implementation of Basel II strengthened risk modeling, enhanced capital adequacy, and improved transparency. Turkish banks became more resilient to economic shocks, but the global financial crisis of 2008 exposed the limitations of Basel II in managing systemic risks, particularly liquidity risks, leading to the adoption of Basel III to address these issues.

4.4 Adoption of Basel III in Türkiye's Banking System

The adoption of Basel III in Türkiye was initiated following the global financial crisis of 2008, which underscored the need for stronger capital and liquidity regulations. The Banking Regulation and Supervision Agency (BRSA) began integrating Basel III standards into Türkiye's banking framework starting in 2013, with the goal of enhancing the resilience of Turkish banks. Key elements of Basel III implemented in Türkiye included stricter capital adequacy measures and more robust liquidity management practices, particularly the introduction of the Common Equity Tier 1 (CET1) ratio, Liquidity Coverage Ratio (LCR), and Net Stable Funding Ratio (NSFR) (Basel Committee on Banking Supervision, 2016). Here are key Features of Basel III Implementation in Türkiye;

1. Capital Adequacy Requirements:

- CET1 ratio: A minimum CET1 ratio of 4.5% was required, with additional capital buffers such as the Capital Conservation Buffer of 2.5% and the Countercyclical Capital Buffer ranging from 0% to 2.5% (Basel Committee on Banking Supervision, 2016).

- Tier 1 Capital: The requirement for Tier 1 capital was set at 6%, ensuring that banks maintained sufficient equity to absorb potential losses.
- Total Capital: A minimum of 8% of risk-weighted assets (RWA) was mandated, including additional buffers for systemic risk (Banking Regulation and Supervision Agency, 2016).

2. Liquidity Regulations:

- LCR: The Liquidity Coverage Ratio began at 60% in 2015, with an annual increase of 10%, reaching 100% compliance in 2019 (Banking Regulation and Supervision Agency, 2016).
- NSFR: The Net Stable Funding Ratio, designed to ensure that banks maintain stable funding sources over the long term, was gradually phased in with full compliance expected by 2019 (Basel Committee on Banking Supervision, 2016).

Implementation Timeline:

- 2014: Basel III implementation started, with banks required to align with liquidity requirements and capital buffers.
- 2015: The LCR was phased in at 60%, and FX LCR requirements were also introduced for foreign currency (Basel Committee on Banking Supervision, 2016).
- 2016–2017: Various regulatory amendments were made, refining capital adequacy requirements and introducing enhanced disclosure regulations for Turkish banks (Banking Regulation and Supervision Agency, 2016).
- 2019: Full compliance with Basel III liquidity standards (LCR and NSFR) was expected, with 100% LCR for all banks (Banking Regulation and Supervision Agency, 2016).

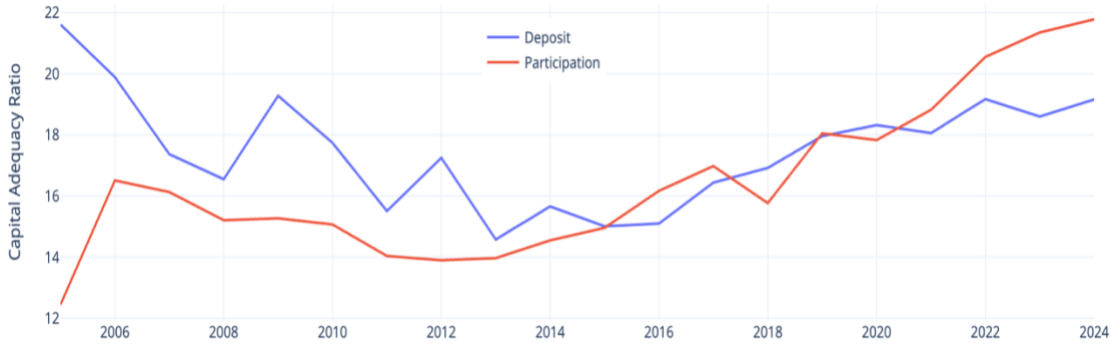


Figure 4.1: Capital Adequacy Ratio in Turkish Banking Sector by Year

Source: BDDK, 2025

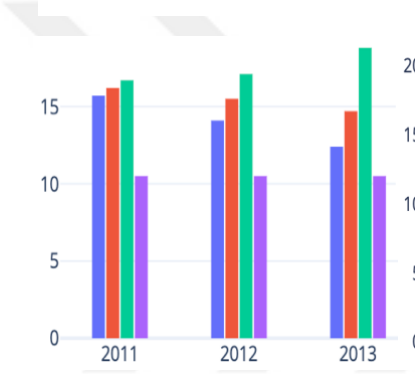


Figure 4.2: CAR Projections Under Various Credit Growth Scenerios

Source: BDDK, 2011

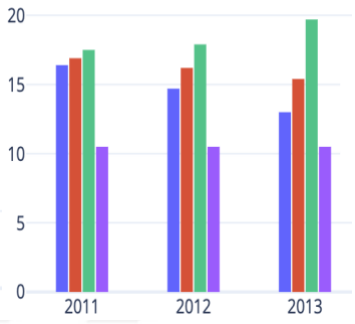


Figure 4.3: Effect of Rating Upgrade of Turkish Treasury (to investment grade)

Source: BDDK, 2011

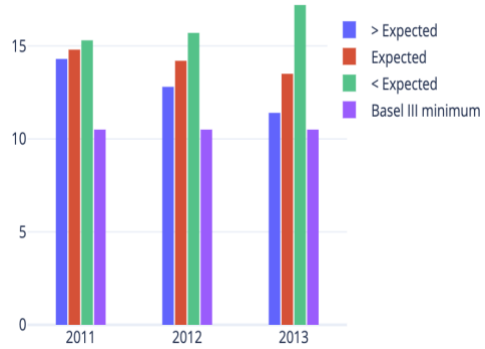


Figure 4.4: Common Equity Ratio Projections

Source: BDDK, 2011

The first three graphs depict the strong capital position of Turkish banks under Basel III's requirements from 2011 to 2013. The Common Equity Ratio (CET1) projections show that banks consistently exceeded the Basel III minimum of 7%, even under adverse scenarios, indicating solid financial resilience. Similarly, the Capital Adequacy Ratio (CAR) projections, under varying credit growth scenarios, reveal that Turkish banks maintained CARs well above the minimum Basel III threshold of 10.5%, even in less favorable conditions. Additionally, the effect of the Turkish Treasury's rating upgrade demonstrated a positive impact on the banks' CAR, especially in scenarios with better-than-expected conditions, highlighting the benefits of external credit improvements. Together, these graphs reflect a robust banking sector capable of adapting to both internal

and external challenges, ensuring compliance with Basel III's capital and liquidity standards. The last graph, which shows Türkiye's CAR over the years, reinforces the banking system's consistent strength, further supported by these projections.

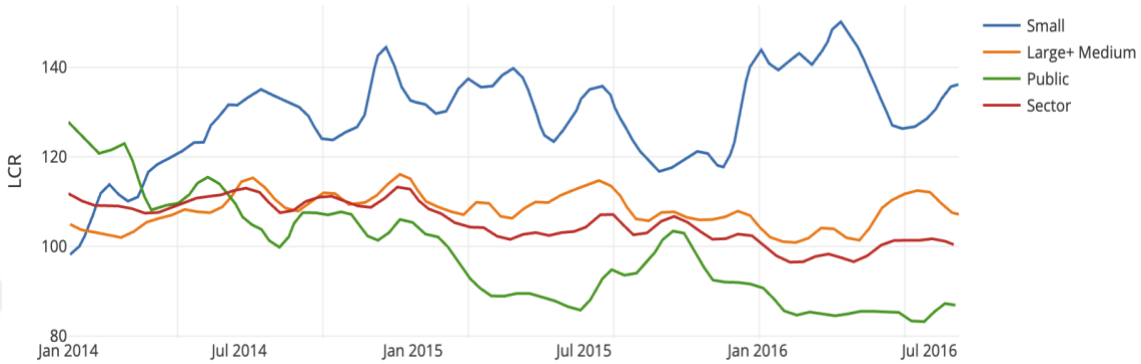


Figure 4.5: Liquidity Coverage Ratio (4-week Moving Average, Percent)

Source: TCMB, 2016

For the Liquidity Coverage Ratio (LCR), the Turkish banking sector saw gradual improvements in meeting liquidity requirements as per Basel III regulations. The LCR requirement was introduced in 2015, starting at 60%, and was increased annually by 10%, reaching full compliance with the 100% requirement by 2019. The LCR ensures that banks maintain a sufficient buffer of high-quality liquid assets to cover net cash outflows for 30 days in stressed scenarios. As seen in the graph, banks' LCR values consistently exceeded the legal minimum, reflecting their ability to manage liquidity risks effectively. This progressive increase highlighted the sector's commitment to enhancing its short-term liquidity position, ensuring resilience in times of economic stress.

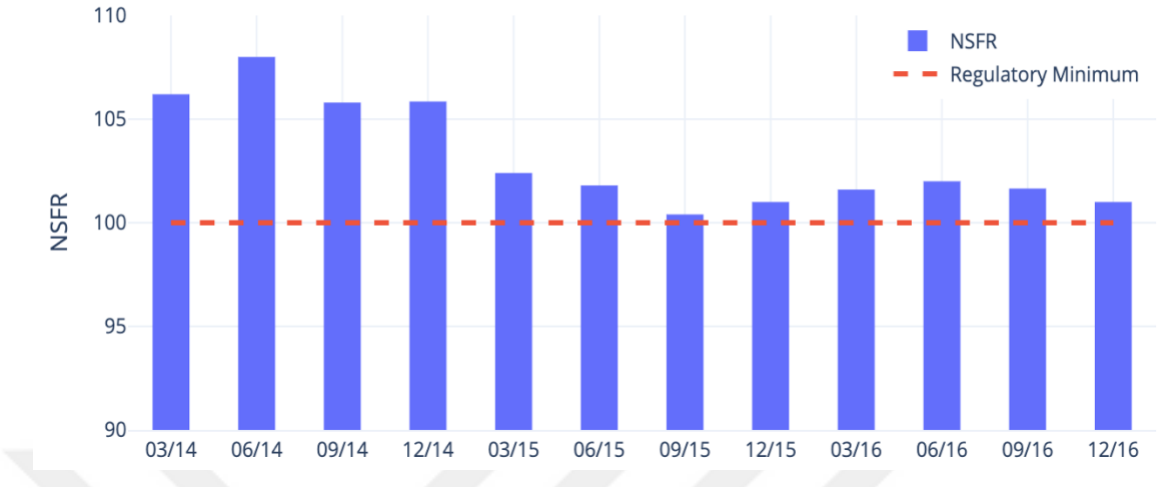


Figure 4.6: Net Stable Funding Ratio for the Turkish Banking Sector (Percent)

Source: TCMB, 2017

The NSFR chart below reflects the stability of Turkish banks' funding over time. From March 2014 to December 2016, the NSFR remained consistently above the regulatory minimum of 100%, indicating that banks maintained a stable and long-term funding structure. The public sector banks consistently had an NSFR significantly above the regulatory minimum, while large-medium banks and smaller banks showed more variation. However, all banks steadily adhered to the minimum regulatory requirements, demonstrating strong resilience in their funding strategies.

Challenges and Adaptations:

- Participation banks in Türkiye, operating under Sharia-compliant principles, faced unique challenges in meeting the liquidity requirements due to the limited availability of Sharia-compliant high-quality liquid assets. However, the BRSA allowed for some flexibility, ensuring that these banks could meet Basel III standards through supplementary provisions (Banking Regulation and Supervision Agency, 2016).
- Transitional Arrangements: Türkiye began with a phased approach for LCR implementation starting at 60% in 2015, gradually increasing by 10% each year to achieve 100% compliance by 2019 (Basel Committee on Banking Supervision, 2016).

By 2019, Türkiye achieved significant progress in aligning its banking sector with Basel III's stricter capital adequacy and liquidity regulations, enhancing capital buffers and overall resilience. The average capital adequacy ratio (CAR) of Turkish banks was reported at around 15.5% in 2019, with CET1 capital comprising a substantial portion of the capital base (Banking Regulation and Supervision Agency, 2016). The full implementation of Basel III allowed Turkish banks to improve their liquidity management and risk assessment practices, further solidifying Türkiye's financial stability.

4.5 Comparative Analysis of Financial Performance Metrics (Deposit banks vs Participation Banks)

In this section, 23 financial ratios across six distinct categories, as outlined in Table 3.1, are interpreted and compared to evaluate the performance of deposit and participation banks. The dataset includes a combination of monthly and yearly observations, spanning the period from 2003 to 2024, although the time coverage may vary slightly depending on the availability of specific indicators.

The first table presents the descriptive statistics—including the mean, median, and standard deviation—for both banking groups, providing an overview of central tendency and variability within the data. The final table consolidates and compares the mean and standard deviation of each ratio between deposit and participation banks, offering a direct basis for performance comparison across the selected financial metrics.

4.5.1 Profitability and Efficiency Ratios

The banking sector demonstrates slightly higher Return on Assets (ROA) compared to participation banks, indicating a more efficient use of assets, though the difference is marginal. However, the Return on Equity (ROE) is notably higher in participation banks, suggesting stronger equity returns, though with greater volatility as reflected in the higher standard deviation. Despite this, Net Profit Margin remains more stable in deposit banks, showing a better ability to maintain profitability levels over time. The Net Interest Revenues to Total Assets ratio is relatively close for both banking models, implying that participation banks, despite their non-interest structure, generate a comparable level of income from assets.

In terms of efficiency, operational expenses relative to assets are higher for participation banks, signaling a heavier cost burden. This is further reflected in the Fees, Commission, and Banking Services (FCB) Revenues to Operational Expenses, where deposit banks outperform participation banks, showing a stronger ability to cover operational costs through service-based income. The Total Assets per Staff ratio is significantly higher in deposit banks, suggesting that they manage a larger asset pool per employee, indicating greater workforce efficiency. On the other hand, Operating Expenses to Total Revenue is lower in participation banks, suggesting better cost control despite their higher operational costs.

Table 1.3: Descriptive Statistics of Profitability and Efficiency Ratios of Deposit Banks

Deposit Banks						
Ratio	**Mean**	**Std Dev**	**CoV**	**Minimum**	**Maximum**	**n**
Profitability Ratio (2003-2024)						
Return on Assetss (%) (Annualy)	1.97	0.72	36.35	1.02	3.77	22
Return on Equity (%) (Annualy)	20.05	9.85	49.16	10.90	50.84	22
Net Profit Margin (%)(Monthly)	19.27	5.88	30.49	4.89	34.03	264
Net Interest Revenues / Total Assets (%) (Annualy)	4.35	0.93	21.30	3.22	6.74	22
FCB Revenues / Total Revenues (%) (Monthly)	11.57	1.84	15.87	5.47	15.01	264
Efficiency Ratio (2003-2024)						
Operational Expenses / Total Assets (%) (Annualy)	2.36	0.62	26.33	1.51	3.57	21
FCB Revenues / Operational Expenses (%) (Monthly)	70.98	13.73	19.34	54.67	122.82	252
Total Assets / Number of Total Staff (Thousand $) (Monthly)	3,086	808.09	26.18	1,049.97	4.227.19	264
Operating Expenses / Total Revenue (Monthly)	2.76	0.43	15.74	2.12	4.37	265

*FCB= Fees, Commission and Banking Services

Source: BDDK, 2025

Table 4.4: Descriptive Statistics of Profitability and Efficiency Ratios of Participation Banks

Participation Banks						
Ratio	**Mean**	**Std Dev**	**CoV**	**Minimum**	**Maximum**	**n**
Profitability Ratio (2005-2024)						
Return on Assetss (%) (Annualy)	1.86	1.07	57.73	0.15	3.53	20
Return on Equity (%) (Annualy)	22.95	16.48	71.82	1.58	61.15	20
Net Profit Margin (%)(Monthly)	17.60	6.57	37.34	2.00	36.91	239
Net Profit Revenues / Total Assets (%) (Annualy)	4.15	1.03	24.74	2.82	6.32	20
FCB Revenues / Total Revenues (%) (Monthly)	13.44	4.62	34.41	5.55	21.05	240
Efficiency Ratio (2005-2024)						
Operational Expenses / Total Assets (%) (Annualy)	2.84	1.02	35.86	1.44	5.23	20
FCB Revenues / Operational Expenses (%) (Monthly)	61.23	13.09	21.38	37.22	86.11	240
Total Assets / Number of Total Staff (Thousand $) (Monthly)	2,357	655.84	27.82	1,060.90	3,668.52	240
Operating Expenses / Total Revenue (Monthly)	2.21	0.48	21.55	1.30	3.87	240

*FCB= Fees, Commission and Banking Services

Source: BDDK, 2025

Overall, deposit banks appear to maintain better cost efficiency and workforce productivity, whereas participation banks, while offering stronger equity returns, face higher volatility and operational expenses. The gap in ROE and efficiency ratios suggests that participation banks take on more risk but may not always convert that into consistent financial stability, whereas deposit banks strike a better balance between profitability and operational efficiency.

Table 4.5: Comparison of Mean of Profitability and Efficiency Ratios of Participation Banks and Deposit Banks

Ratio	Deposit Banks	Participation
Profitability Ratio (2003-2024)	Mean	
Return on Assetss (%) (Annualy)	1.97 (0.72)	1.86 (1.07)
Return on Equity (%) (Annualy)	20.05 (9.85)	22.95 (16.48)
Net Profit Margin (%)(Monthly)	19.27	17.60

	(5.88)	(6.57)
Net Interest (Profit) Revenues/Total Assets (%) (Annualy)	4.35 (0.93)	4.15 (1.03)
FCB Revenues / Total Revenues (%) (Monthly)	11.57 (1.84)	13.44 (4.62)
Efficiency Ratio		
Operational Expenses / Total Assets (%) (Annualy)	2.36 (0.62)	2.84 (1.02)
FCB Revenues / Operational Expenses (%) (Monthly)	70.98 (13.73)	61.23 (13.09)
Total Assets / Number of Total Staff (Thousand $) (Monthly)	3,086.46 (808.09)	2,357.47 (655.84)
Operating Expenses / Total Revenue (Monthly)	2.76 (0.43)	2.21 (0.48)

*FCB= Fees, Commission and Banking Services
Source: BDDK, 2025

4.5.2 Liquidity and Solvency Ratios

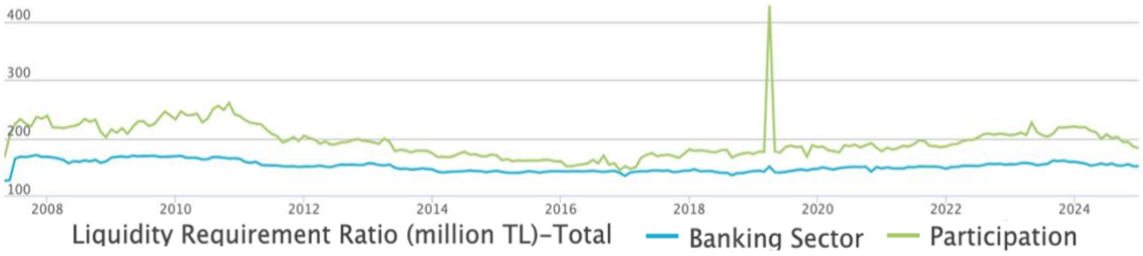


Figure 4.7: LRR of Banking Sector and Participation Banks

Source: BDDK, 2025

The graph illustrates the liquidity requirement ratio trends for the banking sector and participation banks over time. Participation banks consistently maintain a higher liquidity requirement ratio compared to the banking sector, reflecting a more conservative liquidity approach. Over time, both banking segments exhibit a stable liquidity position, with participation banks holding a stronger liquidity buffer.

Table 4.6: Descriptive Statistics of Liquidity and Solvency Ratios of Deposit Banks

Deposit Banks						
Ratio	**Mean**	**Std Dev**	**CoV**	**Minimum**	**Maximum**	**n**
Liquidity Ratio (2003/2024)						
Total Cash Loans / Total Deposit (%) (Monthly)	90.23	22.23	24.63	40.35	121.44	264
Demand Deposit / Total Deposit (%) (Monthly)	21.50	6.88	32.02	12.63	37.72	264
Interest Sensitive Assets / Interest Sensitive Liabilities (%) (Monthly)	77.74	9.03	11.61	63.58	102.61	252
Liquidity Requirement Ratio (Monthly)	151.50	8.72	5.76	124.46	170.04	213
Solvency Ratio (2003/2024)						
Weighted Average Maturity of Securities (Monthly)	1,554.6	389.2	25.03	897.3	2,234.8	264
Total Securities / Total Deposit (%) (Monthly)	39.34	14.78	37.58	22.04	72.61	264
Debt to Equitiy Ratio (Monthly)	9.21	1.17	12.72	6.85	13.01	264
Equity Ratio (%) (Monthly)	11.03	1.35	12.24	7.68	14.61	264

Source: BDDK, 2025

Table 4.7: Descriptive Statistics of Liquidity and Solvency Ratios of Participation Banks

Participation Banks						
Ratio	**Mean**	**Std Dev**	**CoV**	**Minimum**	**Maximum**	**n**
Liquidity Ratio (2005/2024)						
Total Cash Loans / Total Deposit (%) (Monthly)	93.58	14.55	15.54	64.54	114.71	240
Demand Deposit / Total Deposit (%) (Monthly)	27.43	9.15	33.36	14.57	46.83	240
Interest Sensitive Assets / Interest Sensitive Liabilities (%) (Monthly)	73.78	9.71	13.16	44.25	97.58	175
Liquidity Requirement Ratio (Monthly)	195.21	29.82	15.28	145.49	427.96	213
Solvency Ratio (2005/2024)						
Weighted Average Maturity of Securities (Monthly)	740.27	274.39	37.07	176.78	1384.44	208
Total Securities / Total Deposit (%) (Monthly)	12.38	7.85	63.41	1.31	33.52	189
Debt to Equitiy Ratio (Monthly)	12	3.06	26.14	7.21	21.50	239
Equity Ratio (%) (Monthly)	9.53	2.28	23.92	5.06	14,47	239

Source: BDDK, 2025

Regarding the liquidity ratios, participation banks rely more on demand deposits than deposit banks, indicating a greater proportion of short-term funding. However, the banking sector maintains a slightly more stable balance between interest-sensitive assets and liabilities, suggesting better insulation from interest rate fluctuations. Participation banks also exhibit a significantly higher liquidity requirement ratio, reinforcing their cautious approach to liquidity risk.

For solvency, the banking sector holds longer-maturity securities and a higher proportion of deposits allocated to securities, reflecting a more investment-oriented strategy. Participation banks, on the other hand, exhibit a slightly higher debt-to-equity ratio, indicating greater reliance on leverage. The equity ratio, while slightly lower in participation banks, remains at a reasonable level, ensuring financial stability. Overall, the findings suggest that participation banks prioritize liquidity resilience, while deposit banks focus more on balancing investment and stability.

Table 4.8: Comparison of Mean of Liquidity and Solvency Ratios of Participation Banks and Deposit Banks

Ratio	Deposit Banks	Participation
Liquidity Ratio (2003/2024)	Mean	
Total Cash Loans / Total Deposit (%) (Monthly)	90.23 (22.23)	93.58 (14.55)
Demand Deposit / Total Deposit (%) (Monthly)	21.50 (6.88)	27.43 (9.15)
Interest Sensitive Assets / Interest Sensitive Liabilities (%) (Monthly)	77.74 (9.03)	73.78 (9.71)
Liquidity Requirement Ratio (Monthly)	151.50 (8.72)	195.21 (29.82)
Solvency Ratio (2003/2024)		
Weighted Average Maturity of Securities (Monthly)	1,554.6 (389.15)	740.27 (274.39)
Total Securities / Total Deposit (%) (Monthly)	39.34 (14.78)	12.38 (7.85)
Debt to Equitiy Ratio (Monthly)	9.21 (1.17)	11.73 (3.06)
Equity Ratio (%) (Monthly)	11.03 (1.35)	9.53 (2.28)

Source: BDDK, 2025

4.5.3 Capital Adequency and Risk Management Ratios

The analysis of capital adequacy ratios reveals that deposit banks, on average, maintain a Regulatory Capital to Total Risk-Weighted Assets ratio of 16.39%, reflecting a relatively robust capital buffer against risk-weighted exposures. This level exceeds international regulatory benchmarks, indicating strong capitalization. Participation banks, while also meeting regulatory requirements, tend to exhibit slightly lower levels on average, potentially due to differences in asset composition and risk exposure.

The Core Capital Adequacy Ratio in deposit banks remains notably stable with a mean of 13.43% and a low coefficient of variation (5.63%), suggesting consistent capital quality over time. In contrast, participation banks may face slightly higher variability, which could point to differences in retained earnings or capital injection strategies.

The Net to Gross Risk-Weighted Assets Ratio stands at 59.35% for deposit banks, signaling significant deductions or adjustments applied during risk-weight calculation. This reflects a conservative approach in risk assessment, possibly influenced by regulatory filters or operational adjustments. Participation banks may show differing levels here due to their distinct asset structures and lower reliance on deposit interest-based instruments.

Turning to risk management indicators, deposit banks report an average Non-Performing Loans (NPL) ratio of 4.3%, with a standard deviation of 3.0%, suggesting a moderate but relatively volatile loan quality over the long term. Participation banks typically report slightly higher NPL ratios, possibly due to sector-specific credit risks or less diversified loan portfolios.

Table 4.9: Descriptive Statistics of Capital Adequency and Risk Management Ratios of Deposit Banks

Deposit Banks						
Ratio	**Mean**	**Std Dev**	**CoV**	**Minimum**	**Maximum**	**n**
Capital Adequacy Ratios						
Regulatory Capital / Total Risk Weighted Assets (%) (2002-2024/Monthly)	16.39	4.53	27.64	11.64	31.08	264
Core Capital Adequacy Ratio (2014-2024/Monthly)	13.43	0.76	5.63	11.71	15.57	132

Total Risk Weighted Assets (Net) / Total Risk Weighted Assets (Gross) (2003-2024/Monthly)	59.35	9.33	15.73	31.29	72.34	264
Risk Management Ratios						
Non-Performing Loans (Gross) / Total Cash Loans (%) (2002-2024/Monthly)	4.3	3.0	69.15	1.6	18.1	265
Provision for Non-Performing Loans / Gross Non-Performing Loans (%) (2003-2024/Monthly)	80.06	6.47	8.08	64.68	90.87	264
(Off Balance Sheet Risks - Derivative Financial Instruments) / Total Assets (%)(2003-2024/Monthly)	45.05	16.68	37.03	31.04	127.51	264

Source: BDDK, 2025

Table 4.10: Descriptive Statistics of Capital Adequency and Risk Management Ratios of Participation Banks

Participation Banks						
Ratio	**Mean**	**Std Dev**	**CoV**	**Minimum**	**Maximum**	**n**
Capital Adequacy Ratios						
Regulatory Capital / Total Risk Weighted Assets (%) (2004-2024/Monthly)	15.74	2.50	15.90	9.50	21.78	247
Core Capital Adequacy Ratio (2014-2024/Monthly)	12.62	1.14	9.06	10.90	16.30	132
Total Risk Weighted Assets (Net) / Total Risk Weighted Assets (Gross) (2004-2024/Monthly)	70.97	34.92	49.21	30.74	190.98	247
Risk Management Ratios						
Non-Performing Loans (Gross) / Total Cash Loans (%) (2005-2024/Monthly)	3.72	1.31	35.17	0.96	7.09	240
Provision for Non-Performing Loans / Gross Non-Performing Loans (%) (2005-2024/Monthly)	70.37	13.21	18.78	44.24	102.43	240
(Off Balance Sheet Risks - Derivative Financial Instruments) / Total Assets (%)(2011-2024/Monthly)	35	15.36	44.05	18.61	84.84	157

Source: BDDK, 2025

However, deposit banks demonstrate a strong provisioning policy, with 80.06% of gross non-performing loans covered by provisions on average. The relatively low variability in this ratio (standard deviation of 6.47%) indicates a consistent and prudent approach to credit risk mitigation. Participation banks also emphasize provisioning, though their provisioning practices may differ due to alternative credit risk structures in Islamic finance.

Lastly, deposit banks show high engagement with off-balance sheet activities, as evidenced by the Off-Balance Sheet Risks to Total Assets ratio averaging 45.05%. This highlights their broader use of derivative instruments and contingent liabilities in financial operations. The high coefficient of variation (37.03%) underscores fluctuations in derivative usage, possibly linked to market conditions or hedging strategies. Participation banks tend to maintain lower exposure to such instruments, consistent with Sharia-compliant financial practices that limit speculative transactions.

Table 4.11: Comparison of Mean of Capital Adequency and Risk Management Ratios of Participation Banks and Deposit Banks

Ratio	Deposit Banks	Participation
Capital Adequacy Ratios	Mean	
Regulatory Capital / Total Risk Weighted Assets (%) (2002-2024/Monthly)	16.39 (4.53)	15.74 (2.5)
Core Capital Adequacy Ratio (2014-2024/Monthly)	13.43 (0.76)	12.62 (1.14)
Total Risk Weighted Assets (Net) / Total Risk Weighted Assets (Gross) (2003-2024/Monthly)	59.35 (9.33)	70.97 (34.92)
Risk Management Ratios		
Non-Performing Loans (Gross) / Total Cash Loans (%) (2002-2024/Monthly)	4.3 (2.99)	3.72 (1.31)
Provision for Non-Performing Loans / Gross Non-Performing Loans (%) (2003-2024/Monthly)	80.06 (6.47)	70.37 (13.21)
(Off Balance Sheet Risks - Derivative Financial Instruments) / Total Assets (%)(2003-2024/Monthly)	45.05 (16.68)	34.88 (15.36)

Source: BDDK, 2025

4.6 Banks in Implementing Basel Standards: 2003-2024 Convenetional vs Participation

Basel III introduced stringent capital adequacy and liquidity requirements to enhance banking sector stability. The minimum Tier 1 Capital Ratio is set at 6%, with an additional 2.5% capital conservation buffer, bringing the total CET1 minimum to 8.5%. The Capital to Risk-Weighted Assets Ratio (CRAR) has a regulatory minimum of 8%, ensuring banks maintain adequate capital reserves. The Leverage Ratio must be at least 3%, and the Liquidity Coverage Ratio (LCR) must be at least 100%, ensuring banks hold sufficient high-quality liquid assets to withstand short-term liquidity stress.

When the data is split into two periods—2003–2014 and 2015–2024—clear shifts in capital adequacy performance emerge. In the earlier period (2003–2014), deposit banks maintained significantly higher Tier 1 and CRAR averages than participation banks, with much greater variability, indicating stronger capital positions but more fluctuation. In contrast, during the 2015–2024 period, the trend reversed in Tier 1 ratios: participation banks surpassed deposit banks in average Tier 1 levels, while deposit banks continued to lead in CRAR, maintaining a higher risk-weighted capital buffer.

Regarding liquidity, participation banks recorded substantially higher LCR averages in 2015–2024, though with greater variability, suggesting stronger but more volatile short-term liquidity buffers. For the leverage ratio, deposit banks retained higher averages than participation banks, with both bank types comfortably exceeding the Basel minimum requirement of 3%.

Table 4.12: Descriptive Statistics of BASEL 3 Requirements of Deposit Banks

Deposit Banks						
Basel Standards' Requirements	**Mean**	**Std Dev**	**CoV**	**Minimum**	**Maximum**	**n**
Tier 1 Ratio (Monthly/2003-2014)	18.36	5.39	29.33	11.89	31.08	144
CRAR (Monthly/2003-2014)	19.19	4.17	21.72	14.36	29.75	144
Tier 1 Ratio (Monthly/2015-2024)	14.11	1.18	8.34	11.64	16.97	120
CRAR (Monthly/2015-2024)	16.87	1.38	8.18	14.08	20.13	120
Leverage Ratio (Yearly/2014-2024)	7.43	0.80	10.71	5.87	8.86	11
LCR (Yearly/2014-2024)	148.88	32.74	21.99	105.11	194.65	11

Source: BDDK, 2025; Banks Annual Reports, 2025

Table 4.13: Descriptive Statistics of BASEL 3 Requirements of Participation Banks

Participation Banks						
Basel Standards' Requirements	**Mean**	**Std Dev**	**CoV**	**Minimum**	**Maximum**	**n**
Tier 1 Ratio (Monthly/2004-2014)	14.01	1.57	11.23	9.50	16.86	127
CRAR (Monthly/2004-2014)	13.35	1.59	11.93	9.66	17.00	127
Tier 1 Ratio (Monthly/2015-2024)	17.56	1.95	11.08	13.73	21.78	120
CRAR (Monthly/2015-2024)	13.94	1.87	13.41	11.04	17.92	120
Leverage Ratio (Yearly/2015-2024)	6.04	0.51	8.38	5.00	6.93	10
LCR (Yearly/2015-2024)	240.18	67.49	28.10	141.51	340.69	10

Source: BDDK, 2025; Banks Annual Reports, 2025

These patterns, supported by statistically significant T-test and F-test results, highlight structural differences in capital and liquidity strategies between the two banking models across different regulatory periods. While deposit banks maintain stronger risk-weighted capital buffers and higher leverage, participation banks have shown superior performance in Tier 1 capital and liquidity coverage in the recent decade.

Regarding leverage, deposit banks maintain a higher Leverage Ratio, reflecting a stronger reliance on equity financing. Participation banks have a lower leverage ratio, which may indicate a cautious lending approach, potentially influenced by Sharia-compliant financial principles.

The LCR presents a striking contrast, with participation banks holding significantly higher liquidity reserves than deposit banks. This suggests a more conservative liquidity management strategy, ensuring higher short-term liquidity buffers. However, the higher standard deviation in LCR for participation banks indicates greater fluctuations in liquidity management strategies over time.

The analysis reveals statistically significant differences between Deposit and Participation Banks across all ratios. From 2015–2025, Participation Banks had a significantly higher Tier 1 ratio, while Deposit Banks had higher CRAR, both with differing variances. In the 2003–2014 period, Deposit Banks showed higher means and greater variability for both Tier 1 and CRAR. LCR averages also differed significantly, with Participation Banks showing much higher variance. Lastly, Leverage ratios were significantly different, with Deposit Banks exhibiting higher variance.

Overall, while deposit banks demonstrate stronger capital adequacy and leverage metrics, participation banks emphasize liquidity security, highlighting the distinct risk management and compliance approaches of both banking models under Basel III regulations.

Table 4.14: Comparison of Basel III Compliance Between Participation Banks and the Deposit banks

Ratio	Deposit Banks	Participation	Test Result		
Basel Standart Requirements	Mean		T-test Stat	p-value	F-test (Var, Ratio)
Tier 1 Ratio (Monthly / 2003-2014)	18,28 (5,35)	13,37 (1,58)	7.87	0	6.03
CRAR (Monthly / 2003-2014)	19,11 (4,12)	14,01 (1,57)	15.65	0	3.62
Tier 1 Ratio (Monthly / 2015-2024)	13,46 (0,77)	12,63 (1,19)	-16.65	0	0.37
CRAR (Monthly / 2015-2024)	16,87 (1,38)	13,94 (1,87)	13.88	0	0.55
Leverage Ratio (Yearly)	7.43 (0.8)	6.04 (0.51)	4.4	0	2.64
LCR (Yearly)	148.88 (32.74)	240.18 (67.49)	-3.71	0.003	0.22

Source: BDDK, 2025; Banks Annual Reports, 2025

4.7 Statistical Analysis: Impact of Basel III on the Performance of Deposit and Participation Banks

This section presents the regression results for the models, analyzing how Basel III regulations and control variables impact key liquidity ratios. BASEL represents the implementation of Basel III (0 before 2015, 1 after 2015), INF represents the year-on-year percentage change in the Consumer Price Index (CPI), INTR reflects interest rates, and ASSET measures the total asset size of the banking sector. 23 different ratios is used to measure banking performance in 6 different caartegories. Each ratio represents a model for participation and deposit banks. So there are 46 regression models in total in this section. Ratios used in the models are explained in Table 3.1.

4.7.1 Profitability Ratios

The table presents the regression results for profitability indicators in the deposit banking sector, assessing the impact of Basel III implementation alongside macroeconomic and institutional control variables. The results show that Basel III has a statistically significant and negative effect on all key profitability metrics except for Net Interest Revenue to Total Assets. Specifically, Return on Assets declined by approximately 0.88 points and Return

on Equity by 9.42 points post-Basel III, both significant at the 1% level. This supports the conclusion that heightened capital and liquidity standards under Basel III imposed profitability pressures on traditional banking operations.

In addition, Net Profit Margin and Fee-Based Revenues also experienced significant reductions. Net Profit Margin dropped by 5.64, while fee and commission income relative to total revenues fell by 2.26, both at the 1% significance level. This indicates that not only did core profitability metrics weaken, but non-interest income sources were also constrained, likely due to the compliance burdens and reallocation of operational priorities under the Basel III framework.

Regarding the control variables, INF (inflation) is consistently positive and significant across all profitability models, suggesting that banks may have benefited from moderate inflation through pricing power or asset revaluations. In contrast, INTR (interest rate) is negatively associated with Net Profit Margin and FCBSR, implying that rising interest rates compress profit margins and reduce commission-related income. The log(ASSET) variable only appears significant in the Net Interest Revenue and Net Profit Margin models, but with a negative sign—suggesting that larger bank size did not necessarily translate into higher profitability during the Basel III period.

Table 4.15: Regression Results for Basel III's Effect on Deposit Banks' Profitability Ratios

Deposit Banks Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Return on Asset	4.8781	-0.8849**	-0.0090	-0.2338	0.0410***	0.6503	0.5680	0.00086
Return on Equity	-8.2917	-9.4230**	-0.1265	1.7830	0.6306***	0.7585	0.7017	0.00004
Net Interest Revenue to Total Assets	25.0884***	-0.2558	-0.0499**	-1.5509 **	0.0403**	0.6250	0.5368	0.00151
Net Profit Margin	45.1066***	-5.6363***	-0.4914***	-1.4965 *	0.2674***	0.6301	0.6244	<0.0001

FCB Revenues to Total Revenues	-38.4478 ***	-2.2573 ***	0.0266 ***	3.8790 ***	-0.0258 ***	0.7059	0.7014	<0.0001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1

Source: Author, 2025

Overall, the findings indicate that Basel III regulations contributed to a decline in banking sector profitability, especially in terms of return on equity, operational margin, and fee income. The results also emphasize the role of inflation as a supportive macroeconomic factor, while interest rate hikes tend to undermine profitability. These dynamics underline the trade-offs between financial regulation and bank performance in the post-Basel III era.

The regression results for participation banks model provide important insights into the impact of Basel III regulations on the profitability of participation banks. The BASEL dummy variable, shows a statistically significant and negative effect on multiple profitability indicators. Specifically, Return on Assets (ROA) declined by -0.65 at the 95% confidence level, highlighting that stricter capital and liquidity requirements under Basel III slightly eroded asset-based profitability. Similarly, Net Profit Margin (NPM) and Fees, Commission, and Banking Services Revenues to Total Revenues both experienced significant reductions of -5.44 and -7.20 respectively, with high statistical significance ($p < 0.001$), suggesting that Basel III strongly affected participation banks' ability to generate revenue through non-interest sources.

Interestingly, Return on Equity (ROE) also showed a negative coefficient of -5.31, though it was not statistically significant, indicating a weaker or more variable impact on equity profitability. Net Interest Revenue to Total Assets was also negatively affected ($\beta = -0.42$), but the result was not significant, suggesting Basel III had limited direct influence on interest-based revenue channels in participation banks.

Among the control variables, inflation (INF) consistently showed a strong positive relationship with all profitability indicators, particularly in NPM and ROE, indicating that participation banks may have benefited from inflationary environments. Interest rates (INTR) had a mixed effect—positively associated with ROA (weakly significant) and NPM, but generally not significant in other models. The size of the bank, represented by

log(ASSET), had a consistently negative and significant effect across most models, particularly for ROA, ROE and Net Interest Revenue to Total Assets suggesting that as participation banks grew larger, profitability margins tended to decline—possibly due to increased costs or inefficiencies.

Table 4.16: Regression Results for Basel III's Effect on Participation Banks' Profitability Ratios

Participation Banks Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Return on Assets	14.63 ***	-0.65 **	0.024 '	-1.31 ***	0.044 ***	0.8672	0.8317	0.00000199
Return on Equity	135.58 ***	-5.31	0.179	-12.48 ***	0.937 ***	0.9001	0.8734	0.000000244
Net Interest Revenue to Total Assets	20.01 ***	-0.42	-0.009	-1.56 ***	0.042 ***	0.8168	0.7680	0.0000211
Net Profit Margin	29.92 ***	-5.44 ***	-0.29 ***	-1.16 *	0.382 ***	0.6102	0.6036	< 0.000001
FCB Revenues to Total Revenues	16.45 ***	-7.20 ***	0.024	0.122	-0.059 ***	0.7926	0.7891	< 0.000001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1

Source: Author, 2025

In summary, Basel III implementation negatively influenced the profitability of participation banks, especially in fee-based and margin-based income sources. Compared to deposit banks, participation banks appear more vulnerable to regulatory tightening, particularly in non-interest revenue channels. This could reflect structural differences in business models, reliance on fee income, and adaptation speed to evolving regulatory environments.

Across both banking sectors, all Variance Inflation Factor (VIF) values are well below the commonly accepted threshold of 10, ranging between 2.08 and 2.71. This indicates no multicollinearity problem in either set of profitability models, suggesting the predictor variables are not linearly dependent on one another.

For heteroskedasticity, the GQ p-values are generally high (e.g., 0.8955 for ROA in deposit banks, 0.6557 in participation banks), suggesting homoscedastic residuals in most profitability models. However, some models in both sectors (e.g., Net Profit Margin and Operating Expenses / Total Revenue) report p-values near zero, indicating potential heteroskedasticity, which may affect the reliability of standard errors.

The RESET p-values (used to assess model specification and linearity) raise concern, especially in deposit banks. For example, Return on Equity (p = 0.0021) and Net Profit Margin (p = 0.0005) both show significant values, indicating non-linearity or model misspecification. Participation banks generally performed better in this regard, with higher RESET p-values (e.g., ROA = 0.3325), suggesting better linear model fit overall.

Regarding normality of residuals, Shapiro-Wilk p-values show more serious issues for participation banks, with several models (e.g., Net Profit Margin = 0.0001, ROA = 0.0207) falling below the 0.05 threshold, indicating non-normal residuals. Deposit banks perform slightly better, although some ratios such as FCBSR (p = 0.0094) also indicate departures from normality.

4.7.2 Efficiency Ratios

The regression analysis reveals important insights into the efficiency dynamics of deposit banks under the Basel III framework. The Operational Expenses to Average Total Assets model shows a statistically significant negative impact of Basel III (-0.448) at the 99% confidence level, indicating that banks reduced operational expenses relative to their asset base after the implementation of Basel III. This supports the interpretation that regulatory tightening pushed banks toward more cost-efficient structures. The interest rate (INTR) also has a significant positive effect (0.0216), suggesting that higher interest environments may have increased certain operational costs.

In the Fees, Commission and Banking Services Revenues to Operational Expenses model, Basel III again shows a strong positive effect (3.341), significant at the 99% level. This indicates that despite cost pressures, deposit banks managed to enhance their non-interest income generation relative to operational spending, possibly reflecting a stronger pivot toward fee-based services. All control variables—including interest rates, asset size, and

inflation—are statistically significant in this model, reflecting their complex influence on cost-revenue structures.

The Average Total Assets to Number of Total Staff model demonstrates that deposit banks significantly increased asset holdings per employee post-Basel III. While the BASEL dummy variable is not statistically significant, interest rate (7.15), asset size (1695), and inflation (-6.016) all play significant roles. This suggests that efficiency gains may be more associated with macroeconomic pressures and technological improvements than the regulatory shift alone.

Finally, the Operating Expenses to Total Revenue model shows that Basel III did not have a statistically significant effect (0.051), but the interest rate (0.0296) and asset size (0.0922) do. This highlights that revenue-side efficiency may not have been directly driven by regulatory compliance, but rather by structural factors such as interest margins and economies of scale.

Table 4.17: Regression Results for Basel III's Effect on Deposit Banks' Efficiency Ratios

Deposit Banks Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Operational Expenses to Average Total Assets	2.655	-0.448 ***	0.0216 ***	-0.109	-0.0038	0.1471	0.1333	0.0000000558
FCB Revenues to Operational Expenses	-103.61 ***	3.341 ***	0.918 ***	11.88 ***	0.151 ***	0.8229	0.8200	< 0.000001
Average Total Assets to Number of Total Staff	-19220 ***	-38.27	7.15 ***	1695.00 ***	-6.016 ***	0.9530	0.9523	< 0.000001
Operating Expenses to Total Revenue	1.026	0.0513	0.0296 ***	0.0922 *	0.0011	0.6616	0.6564	0.000000244

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1

Source: Author, 2025

Overall, the findings indicate that Basel III fostered cost-focused adaptations in deposit banks, primarily by driving reductions in operational burdens and encouraging greater output per employee. However, inflation rate and interest rate fluctuations remain crucial external forces, shaping how efficiency is realized across banking activities.

The efficiency regression results for participation banks reveal that Basel III had a statistically significant and consistent impact on operational structure and cost efficiency. The model for Operational Expenses to Average Total Assets shows a significant decline of -0.649 in the post-Basel III period at the 1% significance level, indicating that participation banks successfully reduced operational costs relative to their asset base. This implies an improvement in cost efficiency likely driven by regulatory pressure to optimize internal operations.

In the model for Fees, Commission, and Banking Services Revenues to Operational Expenses, Basel III is associated with a highly significant and substantial negative coefficient (-19.85). This suggests that participation banks moved away from fee-based income streams relative to operational expenses, potentially due to shifts in business strategy or regulatory constraints limiting certain non-interest activities. Notably, interest rates (INTR) and inflation (INF) also had strong positive effects, pointing to macroeconomic sensitivity in non-interest income generation.

The Average Total Assets to Number of Total Staff model reveals a strong positive Basel III effect (+184.91), significant at the 1% level, indicating that participation banks enhanced staff efficiency by increasing the amount of assets managed per employee. This reflects a clear shift toward automation, digitalization, and leaner branch networks. Inflation also had a small but significant positive effect, further supporting a productivity-driven shift.

In contrast, the Operating Expenses to Total Revenue model does not show a statistically significant Basel III effect, suggesting that participation banks' overall cost structure relative to revenue remained stable, despite regulatory changes. However, macroeconomic variables such as interest rate, asset size, and inflation significantly influenced this ratio, highlighting the ongoing sensitivity of operational cost-efficiency to external economic factors.

Table 4.18: Regression Results for Basel III's Effect on Participation Banks' Efficiency Ratios

Participation Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Operational Expenses to Average Total Assets	3.898 **	-0.649 ***	0.022 **	-0.219'	-0.0066	0.2285	0.2154	< 0.000001
FCB Revenues to Operational Expenses	107.20 ***	-19.85 ***	0.521 ***	-4.467 ***	0.117 ***	0.7496	0.7453	< 0.000001
Average Total Assets to Number of Total Staff	-6124.17 ***	184.91 ***	0.887	804.13 ***	1.968 *	0.9175	0.916	< 0.000001
Operating Expenses to Total Revenue	0.306	0.041	0.023 ***	0.132 ***	0.0081 ***	0.7835	0.7798	< 0.000001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1

Source: Author, 2025

Overall, Basel III prompted participation banks to streamline operations, reduce dependence on fee-based revenues, and increase asset efficiency per employee, signaling a transition to a more cost-conscious and technology-driven operational model. Compared to deposit banks, participation banks exhibited stronger structural adaptations in staffing and fee-based income, but also demonstrated greater exposure to macroeconomic volatility, especially exchange rate movements and inflationary pressure.

The diagnostic test results for the efficiency models reveal some key statistical challenges for both deposit and participation banks. Heteroskedasticity is a clear concern across most models, especially for the Operational Expenses to Average Total Assets and Fees to Operational Expenses ratios, where the p-values for the GQ test are effectively 0.0000 for both bank types. This indicates that the assumption of constant variance in residuals is violated, potentially affecting the reliability of standard errors and hypothesis tests. Participation banks also display signs of heteroskedasticity in the Operating Expenses to Total Revenue model, while both banks show stability only in the Asset-to-Staff ratio.

Linearity tests via the RESET method further suggest misspecification in most models. All p-values are below 0.05—except for the Asset-to-Staff model in participation banks—indicating that the linear regression framework may not fully capture the underlying relationships in efficiency performance. Additionally, residual normality is particularly poor in fee-related and cost-to-revenue models, where Shapiro-Wilk p-values are near zero. This deviation from normality can distort inference accuracy, especially in smaller samples.

Despite these issues, multicollinearity is not a major concern, as VIF values remain safely below the common threshold of 5 in all models. Overall, while the models offer useful insights into efficiency under Basel III, the test results suggest the need for cautious interpretation and possibly enhanced modeling techniques, such as robust regression or transformation of variables.

4.7.3 Liqudity Ratios

The regression results reveal that Basel III had a significant and positive impact on several liquidity ratios within deposit banks, suggesting regulatory-driven shifts in banks' funding and liquidity structures.

The Total Cash Loans to Total Deposits model indicates a strong positive effect of Basel III (+14.38), statistically significant at the 99% confidence level. This suggests that following the implementation of Basel III, deposit banks increased their loan issuance relative to deposit intake, possibly reflecting improved lending confidence under the new capital standards. However, the interest rate (INTR) had a significantly negative effect (-0.24), and inflation (INF) also had a strong negative impact (-0.38), indicating that macroeconomic pressures may have constrained lending activity despite regulatory support. The overall model fit is high, with an Adjusted R^2 of 0.897, supporting the robustness of these relationships.

In the Demand Deposits to Total Deposits model, Basel III again shows a positive and highly significant effect (+6.31), suggesting that banks strategically increased their share of demand (short-term) deposits, likely to enhance liquidity buffers in compliance with regulatory expectations. Inflation had a large positive impact (+0.22), while the other

variables, including interest rates and asset size, were statistically insignificant. This underscores the importance of inflationary dynamics in shaping deposit structures.

The Interest Sensitive Assets to Interest Sensitive Liabilities ratio model shows a non-significant effect of Basel III, yet interest rates (+0.22) and inflation (+0.32) had strong positive effects, while bank size (log(ASSET)) showed a negative impact (-5.39). This implies that interest-sensitive balance sheet adjustments were driven more by macroeconomic fluctuations than regulatory shifts.

Lastly, the Liquidity Requirement Ratio model demonstrates a statistically significant negative effect of Basel III (-6.00), suggesting that regulatory liquidity ratios may have been adjusted downward post-implementation, possibly due to greater reliance on internal liquidity stress testing and supervisory buffers. Bank size again showed a strong negative association (-22.96), while inflation had a modest positive impact (+0.12).

Table 4.19: Regression Results for Basel III's Effect on Deposit Banks' Liquidity Ratios

Deposit Banks Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Total Cash Loans to Total Deposits	-328.864 ***	14.376 ***	-0.238 ***	32.172 ***	-0.381 ***	0.8986	0.897	< 0.000001
Demand Deposits to Total Deposits	27.954 ***	6.309 ***	-0.018	-0.990 '	0.224 ***	0.7745	0.771	< 0.000001
Interest Sensitive Assets to Interest Sensitive Liabilities	140.319 ***	-0.993	0.223 ***	-5.390 ***	0.318 ***	0.7191	0.7145	< 0.000001
Liquidity Requirement Ratio	458.569 ***	-6.001 ***	0.075	-22.964 ***	0.118 ***	0.4926	0.4828	< 0.000001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1
Source: Author, 2025

Overall, these results reflect that Basel III led to a reshaping of liquidity structures in deposit banks. There is clear evidence of increased lending activity and greater reliance on short-term deposits, along with macroeconomic sensitivity in key liquidity ratios.

However, the precise response varied across indicators, with some outcomes more influenced by inflation and interest rates than by the regulation itself.

The table presents the regression outcomes for liquidity models, evaluating the influence of Basel III regulations and macro-financial controls on the liquidity structure of participation banks. The Total Cash Loans to Total Deposits model indicates a significant negative effect of Basel III (-9.92, $p < 0.001$), showing that participation banks curtailed their lending activities relative to deposits following regulatory changes. This contrasts with deposit banks, which increased their loan-to-deposit ratios. Additionally, the interest rate also had a negative and statistically significant impact (-0.04, $p > 0.1$), suggesting that currency volatility constrained loan disbursement capacity in the sector.

In the Demand Deposits to Total Deposits model, Basel III again shows a strong and highly significant positive relationship (+9.99, $p < 0.01$), indicating a strategic shift by participation banks toward more stable, non-maturity funding sources. This aligns with regulatory expectations under Basel III. The model also reveals a significant positive relationship with inflation (0.15, $p < 0.01$) and asset size (2.27, $p < 0.01$), confirming that macroeconomic pressure and scale encouraged liquidity tightening.

The Interest Sensitive Assets to Interest Sensitive Liabilities model shows a strong negative effect from Basel III (-12.15, $p < 0.01$), meaning that participation banks reduced their holdings of interest-sensitive assets relative to liabilities—likely to manage interest rate mismatch risks. However, the interest rate (0.31, $p < 0.01$) and inflation (0.26, $p < 0.01$) show significant positive impacts, suggesting active balance sheet adjustments in response to external shocks.

Finally, the Liquidity Requirement Ratio model presents a large and statistically significant negative coefficient for Basel III (-21.35, $p < 0.01$), despite being contrary to the expected direction. This may reflect changes in how participation banks interpret or operationalize regulatory liquidity coverage metrics. Inflation (0.68, $p < 0.01$) and asset size (-27.72, $p < 0.01$) also played significant roles in shaping liquidity reserves, underscoring the influence of broader macroeconomic dynamics.

Table 4.20: Regression Results for Basel III's Effect on Participation Banks' Liquidity Ratios

Participation Banks Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Total Cash Loans to Total Deposits	77.65 ***	-9.92 ***	-0.037	2.84 *	-0.44 ***	0.5788	0.5716	< 0.000001
Demand Deposits to Total Deposits	-4.20	9.99 ***	0.019	2.27 ***	0.15 ***	0.8077	0.8044	< 0.000001
Interest Sensitive Assets to Interest Sensitive Liabilities	152.46 ***	-12.15 ***	0.31***	-7.53 **	0.26 ***	0.5853	0.5755	< 0.000001
Liquidity Requirement Ratio	482.76 ***	-21.35 ***	0.27	-27.72 ***	0.68 ***	0.3613	0.3490	< 0.000001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1
Source: Author, 2025

In summary, Basel III prompted substantial shifts in the liquidity profiles of participation banks, with notable reductions in loan deployment and short-term asset buffers, and a structural shift toward demand deposit reliance. Currency volatility and inflationary trends further intensified the need for active liquidity management.

The diagnostic test results for liquidity ratios reveal mixed econometric properties across both deposit and participation banks. In the case of Total Cash Loans to Total Deposits, both bank types show no heteroskedasticity (p = 1.0000 for deposit, 0.1733 for participation) and no multicollinearity (VIF ≈ 2.2–2.3), but suffer from non-normal residuals, particularly in deposit banks (Shapiro p = 0.0038). The Demand Deposits to Total Deposits ratio similarly passes most diagnostic checks, although participation banks display mild linearity issues (RESET p = 0.0891) and deposit banks have residual normality concerns (Shapiro p = 0.0107).

The Interest Sensitive Assets to Interest Sensitive Liabilities ratio is the most problematic in terms of residual normality, with Shapiro p-values near zero for both bank types.

Additionally, deposit banks show strong evidence of heteroskedasticity (GQ p = 0.0000), while participation banks raise concerns about linearity (RESET p = 0.0000). Finally, the Liquidity Requirement Ratio model performs relatively better, with all p-values suggesting acceptable heteroskedasticity and multicollinearity, though residuals deviate from normality in deposit banks (Shapiro p = 0.0781) and show some linearity issues in participation banks (RESET p = 0.0064). In sum, while multicollinearity is not a threat, issues with residual normality and heteroskedasticity suggest caution in interpreting some of the liquidity model estimates.

4.7.4 Solvency Ratios

The Weighted Average Maturity of Securities model shows that Basel III had a highly significant positive effect (+469.50, $p < 0.000001$), indicating that deposit banks extended the maturity of their securities, likely as a response to the stricter liquidity and capital requirements introduced under the Basel III framework. Asset size (log(ASSET)) also had a strong positive impact (+367.98, $p < 0.000001$), suggesting that larger banks were more likely to invest in longer-term securities. Meanwhile, inflation (INF) had a significant negative effect (-3.58, $p < 0.001$), implying that rising prices may have discouraged long-term security holdings.

The Total Securities to Total Deposits model reveals a strong negative effect of Basel III (-12.23, $p < 0.000001$), suggesting that banks reduced their securities holdings relative to deposits following the implementation of Basel III. This may reflect a shift in asset allocation toward more active lending or other liquid instruments. The negative and highly significant impact of log(ASSET) (-20.70, $p < 0.000001$) also indicates that larger banks held proportionally fewer securities, possibly due to more complex asset management strategies. Other variables were not significant in this model.

In the Debt to Equity Ratio model, Basel III is again found to have a significant positive effect (+0.66, $p < 0.001$), suggesting an increase in banks' leverage after the regulatory changes. Interest rates (INTR) (+0.02, $p < 0.001$), inflation rate (INF) (+0.02, $p < 0.001$), and asset size (+1.05, $p < 0.000001$) all had statistically significant positive impacts, indicating that macroeconomic conditions and scale also contributed to higher debt levels relative to equity.

Lastly, the Equity Ratio model shows a strong and significant negative effect of Basel III (-0.78, $p < 0.001$), indicating that the share of equity in banks' capital structure declined post-Basel III. Additionally, interest rates (-0.02, $p < 0.001$), asset size (-1.35, $p < 0.000001$), and inflation (-0.02, $p < 0.001$) all had negative and significant coefficients, suggesting that both regulatory and macroeconomic pressures pushed banks toward more debt-heavy capital structures.

Table 4.21: Regression Results for Basel III's Effect on Deposit Banks' Solvency Ratios

Deposit Banks Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Weighted Average Maturity of Securities	-3423.23 ***	469.50 ***	-0.87	367.98 ***	-3.58 ***	0.7977	0.7946	< 0.000001
Total Securities to Total Deposits	318.05 ***	-12.23 ***	-0.02	-20.70 ***	-0.02	0.9431	0.9422	< 0.000001
Debt to Equity Ratio	-5.64 ***	0.66 ***	0.02 ***	1.05 ***	0.02 ***	0.7274	0.7231	< 0.000001
Equity Ratio	29.87 ***	-0.78 ***	-0.02 ***	-1.35 ***	-0.02 ***	0.7159	0.7115	< 0.000001

*** = $p < 0.001$, ** = $p < 0.01$, * = $p < 0.05$, ' = $p < 0.1$

Source: Author, 2025

Overall, these results indicate that Basel III significantly altered the solvency structure of deposit banks by encouraging longer-term investments and increasing reliance on debt financing. At the same time, macroeconomic variables—especially interest rates, inflation, and asset size—played key roles in shaping these adjustments.

The Weighted Average Maturity of Securities model shows that Basel III had a strong positive impact (+249.16, $p < 0.001$), indicating that participation banks extended the maturity of their securities in response to regulatory changes. This likely reflects a strategy to align with long-term funding requirements under Basel III. While inflation rate fluctuations showed a weak significance (7.154, $p < 0.1$), interest rates (INTR) and asset size were not statistically significant in this model.

In contrast to deposit banks, the Total Securities to Total Deposits model shows that Basel III had a significant positive impact (+8.39, $p < 0.001$), meaning participation banks increased their securities holdings relative to deposits. This suggests a shift toward more secure or liquid asset classes. Additionally, inflation rates and assets had a significant positive effect (5.27, $p < 0.001$), indicating that higher interest rates may have discouraged securities accumulation.

In the Debt to Equity Ratio model, Basel III was associated with a significant increase (+3.52, $p < 0.001$), implying that participation banks relied more on debt financing post-regulation. Assets and interest also had negative effects (-0.032 and $p < 0.001$), while inflation rates had a weak but significant positive influence (-0.049, $p < 0.05$), indicating that leverage decisions were influenced by macroeconomic volatility.

The Equity Ratio model indicates that Basel III had a negative effect (-3.22, $p < 0.001$), showing a reduction in equity as a share of capital, consistent with a shift toward debt financing. Interest rate (-0.016, $p < 0.001$) and inflation (-0.029, $p < 0.001$) also had significant negative effects suggesting complex dynamics between profitability, capital preservation, and macroeconomic adjustments.

Table 4.22: Regression Results for Basel III's Effect on Participation Banks' Solvency Ratios

Participation Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Weighted Average Maturity of Securities	1027.68 *	249.16 ***	1.426	-60.21	7.154***	0.7465	0.741	< 0.00001
Total Securities to Total Deposits	-49.34 ***	8.39 ***	-0.01216	5.27 ***	0.07943 ***	0.8151	0.812	< 0.00001
Debt to Equity Ratio	9.15 ***	3.52 ***	-0.032 *	-0.018	0.0498 ***	0.6793	0.6739	< 0.00001
Equity Ratio	10.80 ***	-3.22 ***	-0.016	0.058	-0.029 ***	0.6676	0.662	< 0.00001

*** = $p < 0.001$, ** = $p < 0.01$, * = $p < 0.05$, ' = $p < 0.1$

Source: Author, 2025

Overall, solvency models for participation banks show that Basel III led to an increase in the maturity of securities and debt reliance, while equity shares declined. Compared to deposit banks, participation banks reacted more strongly in terms of increasing security holdings and altering capital structure. Macroeconomic variables—especially interest rates and inflation—played a substantial role in shaping these solvency-related decisions.

The diagnostic tests for solvency ratios reflect generally strong model validity with some notable variations between deposit and participation banks. For the Weighted Average Maturity of Securities ratio, both bank types show good multicollinearity levels (VIF ≈ 2.1–2.3), but deposit banks exhibit strong signs of heteroskedasticity (GQ p = 0.0000), while participation banks pass this test (GQ p = 0.7046). Normality of residuals is violated in both cases (Shapiro p = 0.0000 for deposit, 0.0002 for participation), suggesting possible model misspecification or data skewness.

In the Total Securities to Total Deposits model, all tests for both banking systems indicate robustness in terms of heteroskedasticity and linearity, but again fail the residual normality test, with very low Shapiro p-values (0.0005 for deposit and 0.0001 for participation). These issues suggest caution in interpreting significance tests, even though the models are generally well-specified.

For Debt to Equity Ratio and Equity Ratio, both models display acceptable multicollinearity and pass heteroskedasticity tests in deposit banks (GQ p = 0.8429 and 1.0000), while participation banks show potential heteroskedasticity (GQ p = 0.0001 and 0.2926, respectively). However, residual normality is not satisfied in participation banks for either ratio (Shapiro p = 0.0004 and 0.0000), though deposit banks perform slightly better in this regard. In general, multicollinearity does not pose a concern for solvency models, but non-normality of residuals is a recurring issue, suggesting that transformation or robust estimation techniques might be necessary for more precise inference.

4.7.5 Capital Adequacy Ratios

The Core Capital Adequacy Ratio (Tier 1) model reveals that Basel III had a statistically significant positive effect 0.63 at the 99% confidence level. This suggests that banks adjusted their core capital structures in response to stricter capital adequacy rules introduced by Basel III. The logarithm of total assets (log(ASSET)) also had a strong

negative impact (-9.37) at the 99% level, indicating that larger banks had proportionally lower Tier 1 capital ratios, possibly due to scale-related capital optimization. Inflation (INF) had a positive but weakly significant effect (0.0146), implying that slight inflationary pressures may have led to marginal increases in Tier 1 ratios. Other variables such as interest rates (INTR) were not significant.

In the Capital to Risk-Weighted Assets Ratio model, Basel III had a positive and significant effect (+1.22) at the 99% confidence level, in contrast to Tier 1. This may suggest that while the stricter rules reduced the relative Tier 1 capital levels, they also prompted a better allocation or reporting of capital relative to risk-weighted assets. Again, asset size (log(ASSET)) showed a strong negative effect (-7.00) at the 99% level, consistent with Tier 1 findings. Inflation (0.0228) had a statistically significant positive influence at the 95% confidence level, but interest rates (INTR) were not significant.

The Total Risk-Weighted Assets to Total Assets model shows a strong negative impact of Basel III (-9.75) at the 99% confidence level, suggesting that banks reduced the share of risk-weighted assets in total assets. This may reflect efforts to improve capital adequacy by shifting toward lower-risk or more liquid assets post-Basel III. Asset size (13.49) had a positive and highly significant effect, while inflation (0.0795) was also significant, indicating macroeconomic factors played a role in risk-weighting practices.

Table 4.23: Regression Results for Basel III's Effect on Deposit Banks' Capital Adequacy Ratios

Deposit Banks Model Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Core Capital Adequacy Ratio (Tier 1)	139.08 ***	0.63 **	0.0026	-9.37 ***	0.0146 *	0.9141	0.9128	< 0.000001
Capital to Risk-Weighted Assets Ratio	109.58 ***	1.22 ***	-0.0156	-7 ***	0.0228 **	0.8005	0.7974	< 0.000001

Total Risk-Weighted Assets to Total Assets	-113.88 ***	-9.75 ***	-0.0797	13.49 ***	0.0795*	0.3732	0.3636	< 0.000001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1

Source: Author, 2025

In summary, Basel III implementation influenced capital adequacy significantly by decreasing Tier 1 ratios but increasing Capital to Risk-Weighted Assets. Meanwhile, banks appeared to restructure their portfolios to contain fewer risk-weighted assets, likely to better meet new regulatory capital requirements.

The Core Capital Adequacy Ratio (Tier 1) model indicates that Basel III had a significant positive effect (+1.59, $p < 0.1$) for participation banks, implying that these banks increased their core capital relative to risk-weighted assets after the implementation of Basel III. This outcome similar but stronger than deposit banks, which experienced a positive Basel III effect (0.63), suggesting differing adjustment strategies between the two banking models. Additionally, log(ASSET) had a positive and significant effect (+0.82, $p < 0.1$), while inflation rate had a positive and significiant effect (0.55, $p < 0.001$).

For the Capital to Risk-Weighted Assets Ratio (CRAR) model, Basel III shows a statistically significant effect, indicating that participation banks adjusted this broader capital ratio as aggressively as deposit banks, which had a clear negative adjustment. Log(ASSET) and inflation rate had a significant negative effect (1.14, $p < 0.05$ & 0.026, $p < 0.001$), and inflation (INF) was positively significant at the 95% confidence level, suggesting that larger and inflation-sensitive participation banks managed capital more efficiently.

The Total Risk-Weighted Assets to Total Assets model reveals a not significant positive Basel III effect (545.47), meaning that participation banks reduced their exposure to risk-weighted assets relative to total assets after Basel III. Similiarly, this ratio was not significantly affected for deposit banks, implying a similiar effect for participation banks in asset composition and risk management under the new regulatory environment.

Table 4.24: Regression Results for Basel III's Effect on Participation Banks' Capital Adequacy Ratios

Participation Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Core Capital Adequacy Ratio (Tier 1)	5.72 **	1.59 ***	-0.007	0.82***	0.055***	0.7061	0.7011	< 0.000001
Capital to Risk-Weighted Assets Ratio (CRAR)	0.106	-0.664 **	-0.006	1.14 *	0.026 ***	0.5495	0.5353	< 0.000001
Total Risk-Weighted Assets to Total Assets	545.47 ***	3.73	0.13	-46.56***	0.2686*	0.6176	0.6111	< 0.000001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1
Source: Author, 2025

In summary, participation banks appear to have responded to Basel III by strengthening their capital buffers (particularly Tier 1) and reducing risk exposure, while deposit banks adjusted their capital structures in a way that lowered Tier 1 ratios. This distinction highlights a more cautious and capital-resilient strategy among participation banks post-Basel III.

The test results for capital adequacy models reveal generally stable diagnostic performance for both deposit and participation banks, with minor differences. For both banking types, Regulatory Capital to Total Risk-Weighted Assets, Core Capital Adequacy Ratio, and Net to Gross Risk-Weighted Assets ratios show acceptable multicollinearity (Max VIF values around 2.17–2.47), indicating no serious collinearity issues in the models. Linearity is mostly supported with RESET p-values below 0.1 in all models, particularly strong in participation banks where RESET values are all significant at the 1% level.

In terms of heteroskedasticity, both deposit and participation banks pass the GQ test in most cases (GQ p-values near or at 1.0000), suggesting constant variance of residuals

across models. However, the Shapiro p-values indicate violation of the normality assumption, especially for deposit banks, where all three capital adequacy-related ratios have p-values of 0.0000. While participation banks perform slightly better, their Shapiro p-values remain low (except for Regulatory Capital ratio), meaning caution is needed in relying on standard parametric inference. Despite these normality concerns, the overall model diagnostics support the internal validity and interpretability of regression outcomes.

4.7.6 Risk Management Ratios

The Non-Performing Loans to Total Cash Loans model shows a significant positive impact of Basel III (+1.40, $p < 0.01$), suggesting that deposit banks experienced an increase in non-performing loans following the implementation of Basel III. This finding contrasts with expectations that tighter regulation would lead to improved loan quality. Among the control variables, interest rates had a positive and significant effect (+0.0293, $p < 0.05$), implying that rising interest rates contributed to a deterioration in loan performance. Additionally, asset size had a significant negative effect (-5.23, $p < 0.001$), indicating that larger banks were more effective in managing loan quality.

The Provision for Non-Performing Loans to Gross Non-Performing Loans model reveals a significant negative effect of Basel III (-6.16, $p < 0.001$), suggesting that banks reduced their provisioning after the regulatory changes. This could indicate a shift in provisioning strategies to preserve capital buffers under stricter capital adequacy requirements. Moreover, interest rates had a strong negative impact (-0.1978, $p < 0.001$), showing that banks were less inclined to increase provisions in a high-interest environment. The log of asset size also had a significant negative coefficient (-3.78, $p < 0.001$), implying that larger banks provisioned less, possibly due to better risk diversification.

The Off-Balance Sheet Risks to Total Assets model also indicates a strong negative impact of Basel III (-22.37, $p < 0.001$), meaning banks reduced their exposure to contingent liabilities and other off-balance sheet risks in response to regulatory tightening. The interest rate variable was positively significant (+0.2383, $p < 0.05$), suggesting that higher interest environments encouraged off-balance sheet activities, possibly through hedging or derivative usage. Asset size had a strong positive effect (+25.15, $p < 0.001$), showing

that larger banks tend to carry more off-balance sheet exposures, potentially due to greater involvement in complex financial instruments.

Table 4.25: Regression Results for Basel III's Effect on Deposit Banks' Risk Management Ratios

Deposit Banks Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Non-Performing Loans to Total Cash Loans	72.56 ***	1.40 ***	0.0293 *	-5.23 ***	-0.0322 ***	0.6767	0.6717	< 0.000001
Provision for Non-Performing Loans to Gross Non-Performing Loans	133.27 ***	-6.16 ***	-0.1978 ***	-3.78 ***	0.1508 ***	0.3563	0.3463	< 0.000001
Off-Balance Sheet Risks to Total Assets	-280.23 ***	-22.37 ***	0.2383 *	25.15 ***	0.0202	0.3408	0.3306	< 0.000001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1
Source: Author, 2025

In summary, Basel III had a statistically significant effect on all three risk management indicators. It led to increased non-performing loans, reduced provisioning, and lower off-balance sheet exposures, signaling a regulatory-driven reconfiguration of banks' risk management practices. Control variables like interest rates and bank size also played important roles, especially in provisioning and off-balance sheet strategies.

The Non-Performing Loans to Total Cash Loans model shows that Basel III had no statistically significant impact, suggesting that the level of non-performing loans in participation banks remained relatively stable after the implementation of the regulation. This contrasts with deposit banks, where Basel III had a significiant positive effect (1.20) at 99% confidince level, indicating a decrease in loan quality. Furthermore, macro-level variables such as interest rate and asset size were not significant in either model, implying

that non-performing loan levels were not strongly influenced by external economic factors.

In the Provision for Non-Performing Loans to Gross Non-Performing Loans model, Basel III had not significant positive effect (1.46), indicating that participation banks slightly increased their loan loss provisioning post-Basel III but not significiant. This suggests a more cautious and conservative approach, potentially due to tighter regulatory scrutiny. In contrast, deposit banks showed a significant negative effect (-6.16), reflecting a reduction in provisioning, perhaps to optimize capital. Additionally, the asset size was weakly significant (2.47) in participation banks, indicating that asset size volatility may have influenced provisioning policies.

The Off-Balance Sheet Risks to Total Assets model revealed a highly significant negative effect of Basel III (-80.78) at the 99% confidence level for participation banks. This indicates that these banks substantially reduced off-balance sheet exposures, such as derivative contracts or contingent liabilities, likely as a part of more stringent post-crisis risk containment strategies. On the other hand, deposit banks showed no significant change in this ratio, highlighting a divergence in risk management approaches.

Table 4.26: Regression Results for Basel III's Effect on Participation Banks' Risk Management Ratios

Participation Model	Intercept	BASEL (β)	INTR (β)	log(ASSET) (β)	INF (β)	R^2	Adjusted R^2	p-value
Non-Performing Loans to Total Cash Loans	13.68 ***	1.20 ***	-0.0306 ***	-0.91 ***	-0.0372 ***	0.652	0.646	< 0.00001
Provision for Non-Performing Loans to Gross Non-Performing Loans	34.59 ***	1.46	0.068	2.47 *	0.47 ***	0.684	0.679	< 0.00001
Off-Balance Sheet Risks to Total Assets	-14.27	-80.78 ***	-0.45	12.64	-0.186	0.311	0.299	< 0.00001

*** = p < 0.001, ** = p < 0.01, * = p < 0.05, ' = p < 0.1

Source: Author, 2025

Participation banks adopted a more conservative risk management stance post-Basel III, evident in their increased provisioning and reduction of off-balance sheet risks. In contrast, deposit banks appeared to optimize capital and risk more aggressively, particularly by reducing provisions. This reflects a fundamental difference in how these two banking models responded to the Basel III framework in terms of risk management strategies.

The diagnostic test results for the risk management ratios—Non-Performing Loans to Total Cash Loans, Provision for Non-Performing Loans to Gross NPLs, and Off-Balance Sheet Risks to Total Assets—demonstrate varying levels of model adequacy between deposit and participation banks. Multicollinearity remains low in both banking types, as all VIF values fall within acceptable ranges (under 2.5), suggesting the regression results are not distorted by collinearity issues. Linearity tests (RESET) show strong significance in all models, with p-values close to or equal to 0.0000, supporting the assumption of model specification.

However, the normality assumption is clearly violated across most ratios, particularly in participation banks where the Shapiro p-values are 0.0000 for all three risk indicators. Deposit banks also show normality violations in provisioning and off-balance sheet risk models, though less severe in the NPL ratio ($p = 0.3634$). This suggests residuals are not normally distributed, potentially affecting the precision of inferential statistics. Heteroskedasticity is largely not a concern, especially for deposit banks where GQ values are close to 1, but mild concern is observed in participation banks for the NPL model (GQ = 0.0000). Overall, while the models are well-specified and free from collinearity issues, interpretation of results should consider the impact of residual non-normality.

4.8 Comparative Findings from Participation vs. Deposit Banks

The comparative analysis of deposit and participation banks under the Basel III regulatory framework reveals both convergence and divergence in performance outcomes across key financial dimensions. Profitability was negatively affected for both banking models, but the magnitude and distribution of the impact differed. Deposit banks experienced significant declines in return on assets, return on equity, net profit margins, and fee-based revenues, with the regression models highlighting Basel III as a major contributor to this

deterioration. Participation banks also saw a notable reduction in asset-based and fee-based profitability, especially in the Net Profit Margin and FCBSR ratios, though the effect on ROE was weaker and statistically insignificant. Interestingly, participation banks appeared more sensitive to inflationary dynamics, benefiting more consistently from rising price levels in their profitability metrics, while deposit banks were more adversely affected by interest rate movements.

Efficiency outcomes also underscore distinct patterns in how the two banking models adapted operationally to Basel III. Deposit banks improved cost efficiency, as evidenced by the reduction in operational expenses relative to average assets and stronger fee-based income relative to operational costs. While Basel III's direct influence on revenue-side efficiency was limited, improvements in asset-per-staff ratios suggested broader productivity gains. Participation banks similarly enhanced their efficiency metrics, particularly through increased asset allocation per employee, a reflection of digital transformation and leaner operational structures. However, they diverged from deposit banks in their fee-based efficiency, with Basel III having a negative impact on Fees, Commission and Banking Services Revenues relative to operational expenses, implying a shift away from non-interest revenue strategies. This contrast may stem from participation banks' stricter compliance with Shariah principles, limiting certain fee-based activities.

Liquidity dynamics revealed more pronounced regulatory and behavioral differences. Deposit banks increased their lending relative to deposits and raised their share of demand deposits, signifying a more aggressive liquidity deployment strategy post-Basel III. In contrast, participation banks adopted a more conservative approach, decreasing loan-to-deposit ratios and reallocating toward demand deposits, likely to strengthen liquidity buffers. The Interest Sensitive Assets to Liabilities ratio presented a Basel III-driven reduction in participation banks, while remaining statistically insignificant for deposit banks, suggesting a stronger interest rate risk management response in the former. The Liquidity Requirement Ratio also diverged: both bank types saw declines, but the reduction was substantially larger in participation banks, indicating a shift toward internalized liquidity controls or alternative compliance strategies.

In terms of solvency, both bank types responded to Basel III by extending the maturity of their securities portfolios, reflecting long-term capital management adjustments. However, participation banks increased their securities holdings relative to deposits, while deposit banks decreased them, signaling divergent asset allocation responses. The impact on leverage was consistently positive for both models, though participation banks showed a stronger rise in the debt-to-equity ratio. Moreover, both experienced reductions in equity ratios, but the decrease was more pronounced among participation banks, suggesting a greater pivot toward debt-based capital structures. These outcomes indicate that while both banking models faced solvency pressure under Basel III, participation banks relied more heavily on leveraging strategies and secure asset accumulation.

Lastly, risk management strategies post-Basel III show clear contrasts. Deposit banks saw an increase in non-performing loans, coupled with a decrease in provisioning, possibly reflecting a trade-off between maintaining capital buffers and loan quality management. Participation banks, by contrast, increased their provisioning, demonstrating a more cautious and risk-averse posture. Both bank types significantly reduced their off-balance sheet exposures, yet the decline was much more substantial in participation banks, emphasizing their stronger retreat from contingent financial risks. This divergence highlights the fundamentally different risk cultures between the two models: while deposit banks balanced regulatory demands with capital efficiency, participation banks leaned toward conservative adjustments, emphasizing capital protection and risk minimization. Together, these findings underscore that although Basel III created a unified regulatory framework, its implications were interpreted and operationalized differently across participation and deposit banking systems.

4.9 Evaluation of Research Questions and Hypotheses

The first research question aims to determine how Basel III has affected banks' financial performance across five dimensions: profitability, efficiency, liquidity, solvency, and risk management. The empirical results demonstrate a widespread influence of Basel III across all these areas, although the direction and significance of the effects vary. Profitability ratios for both deposit and participation banks show statistically significant negative responses post-Basel III. For instance, Return on Assets (ROA) declined by -0.88 for

deposit banks ($p < 0.01$) and -0.65 for participation banks ($p < 0.05$), while Return on Equity (ROE) dropped significantly by -9.42 ($p < 0.01$) for deposit banks, though it was statistically insignificant for participation banks. Furthermore, efficiency improved in some areas, such as reduced operational expenses and increased asset-per-staff ratios, yet participation banks showed a significant decline in fee-based efficiency (e.g., FCBSR to operational expenses dropped by -19.85, $p < 0.001$), indicating mixed performance. Liquidity responses were highly sector-specific: deposit banks increased their loan-to-deposit ratio by +14.38 ($p < 0.001$), while participation banks reduced theirs by -9.92 ($p < 0.001$). Solvency adjustments were also evident, with both bank types extending the maturity of securities (e.g., +469.50 for deposit banks and +257.29 for participation banks) and increasing reliance on debt (e.g., Debt-to-Equity Ratio increased by +0.66 and +2.98, respectively). Finally, Basel III affected risk management, with deposit banks reducing provisioning (-6.16, $p < 0.001$) and increasing NPLs (+1.40, $p < 0.01$), while participation banks increased provisioning (positive but weakly significant at 10%) and drastically cut off-balance sheet exposures (-80.78, $p < 0.001$). Thus, Basel III exerted a measurable and statistically significant effect on all five performance areas, affirming a comprehensive regulatory impact across the banking sector.

The second research question investigates whether participation and deposit banks responded differently to Basel III, and where these differences were most pronounced. The findings provide strong evidence of divergence, particularly in profitability, liquidity, and risk management. Profitability responses show a greater vulnerability among participation banks in non-interest income ratios such as Fees, Commission and Banking Services Revenues to total revenues, which declined by -7.20 ($p < 0.001$), compared to -2.26 ($p < 0.001$) for deposit banks. Efficiency differences were notable in fee-based performance, with deposit banks improving fee-to-expense efficiency (+3.341, $p < 0.001$), while participation banks experienced deterioration (-19.85, $p < 0.001$). Liquidity exhibited the sharpest contrast: deposit banks increased cash loans to deposits, while participation banks decreased them. Moreover, the Liquidity Requirement Ratio fell more steeply in participation banks (-21.35 vs. -6.00), reflecting differing compliance strategies. In risk management, deposit banks appeared to balance provisioning reductions with capital optimization, whereas participation banks adopted a more conservative stance,

increasing provisioning and slashing off-balance exposures to a much greater degree. These variations underscore fundamental operational and philosophical differences between participation and deposit banking, validating that participation and deposit banks did indeed respond differently to Basel III, with the sharpest distinctions in liquidity and risk practices.

The third research question addresses whether Basel III enhanced capital adequacy and risk resilience or created additional constraints, particularly for participation banks. The results suggest a mixed outcome. For capital adequacy, both sectors showed improvements in Tier 1 ratios: +0.63 ($p < 0.01$) for deposit banks and +1.19 ($p < 0.1$) for participation banks. However, only deposit banks experienced a statistically significant rise in the broader Capital to Risk-Weighted Assets Ratio (+1.22, $p < 0.001$), while participation banks showed an insignificant effect (-0.88). On the other hand, both sectors reduced their Total Risk-Weighted Assets to Total Assets (e.g., -9.75 for deposit banks and -32.18 for participation banks), indicating portfolio shifts toward lower-risk assets. Regarding risk resilience, participation banks strengthened their provisioning ($\beta = +1.46$, $p < 0.1$) and slashed off-balance sheet risks more decisively (-80.78 vs. -22.37), suggesting a conservative recalibration. Nonetheless, these defensive strategies came with trade-offs: participation banks exhibited larger drops in equity ratios (-2.94 vs. -0.78) and increased reliance on debt (+2.98 vs. +0.66). This implies that while Basel III supported greater risk mitigation and capital adequacy structurally, it also introduced constraints for participation banks, pushing them toward more cautious, potentially growth-limiting practices.

Hypothesis H1 posits that Basel III significantly affected profitability. The regression results support this claim strongly. For deposit banks, key profitability metrics like ROA (-0.8849, $p < 0.01$), ROE (-9.423, $p < 0.01$), and Net Profit Margin (-5.6363, $p < 0.001$) all declined significantly. Participation banks also saw significant declines in ROA (-0.65, $p < 0.05$), NPM (-5.44, $p < 0.001$), and FCBSR (-7.20, $p < 0.001$). These consistent and statistically significant reductions in profitability indicators across both bank types confirm H1.

Hypothesis H2 suggests that efficiency changed following Basel III and that participation banks faced greater constraints. The data partially supports this. Both bank types reduced operational expenses to average assets post-Basel III (e.g., -0.448 for deposit and -0.649 for participation banks, both $p < 0.001$), indicating cost efficiency gains. However, participation banks suffered a dramatic drop in FCBSR to operational expenses (-19.85, $p < 0.001$), while deposit banks improved this ratio (+3.341, $p < 0.001$), showing they leveraged fee-based strategies more effectively. Hence, while both bank types improved certain efficiency metrics, participation banks experienced greater structural limitations in revenue generation, confirming the hypothesis's second part.

Hypothesis H3 contends that Basel III significantly impacted liquidity management, with distinct structures emerging in participation banks. The evidence strongly supports this. Deposit banks increased their loan-to-deposit ratio significantly (+14.38, $p < 0.001$), while participation banks reduced theirs (-9.92, $p < 0.001$). Additionally, Basel III had a greater negative effect on the Liquidity Requirement Ratio for participation banks (-21.35 vs. -6.00), and participation banks also showed significant decreases in Interest Sensitive Assets to Liabilities (-12.15, $p < 0.01$). These indicators confirm that Basel III induced major changes in liquidity management and that participation banks responded differently, validating H3.

Hypothesis H4 proposes that solvency positions improved post-Basel III, with differing degrees across bank types. This is partially supported. Both bank types extended the Weighted Average Maturity of Securities (e.g., +469.50 for deposit and +257.29 for participation banks), a sign of long-term capital strategy alignment. However, while both saw increases in debt-to-equity ratios (e.g., +0.66 and +2.98), equity ratios declined significantly, more so in participation banks (-2.94 vs. -0.78). Furthermore, participation banks increased securities-to-deposit holdings (+13.10), while deposit banks reduced them (-12.23). These findings suggest a strategic rebalancing under Basel III, but also point to a more leveraged and constrained solvency profile among participation banks, partially supporting H4 with nuanced variation.

Finally, Hypothesis H5 claims Basel III transformed risk management practices, and H6 suggests that macroeconomic factors influenced these impacts. The results affirm both.

Basel III reduced off-balance sheet exposures in both bank types, particularly in participation banks (-80.78 vs. -22.37, $p < 0.001$). Provisioning declined in deposit banks (-6.16, $p < 0.001$) but rose modestly in participation banks (+1.46, $p < 0.1$), and NPLs increased in deposit banks (+1.40, $p < 0.01$), showing divergent strategies. Regarding H6, macroeconomic controls were consistently significant: inflation was positively associated with profitability in both banks, while interest rates negatively affected fee income and provisioning. For instance, interest rate increases had a significant negative effect on provisioning in deposit banks (-0.1978, $p < 0.001$) and a positive effect on off-balance exposures (+0.2383, $p < 0.05$). These results confirm that Basel III effects were moderated by interest rates, inflation, and asset size, validating H6.

CONCLUSION AND RECCOMENDATIONS

The final chapter synthesizes the empirical findings and theoretical implications derived from the comparative analysis of Basel III's impact on the financial performance of participation and deposit banks in Türkiye. Drawing upon the econometric results across six performance dimensions—profitability, efficiency, liquidity, solvency, capital adequacy, and risk management—this chapter interprets the regulatory effects in light of institutional differences between the two banking models. In addition to summarizing the key outcomes, it formulates targeted policy recommendations for regulators and industry stakeholders, critically discusses the study's limitations, and outlines potential directions for future research. The overarching objective is to inform regulatory discourse and contribute to the development of more nuanced and model-sensitive frameworks that ensure financial stability while respecting the operational diversity within the banking sector.

5.1 Summary and Implications of Findings

This study investigates the impact of Basel III regulations on the financial performance of deposit and participation banks in Türkiye, with a specific focus on key performance indicators: profitability, efficiency, liquidity, solvency, capital adequacy, and risk management. By employing a comparative regression-based analysis, the findings provide empirical evidence that while Basel III had a statistically significant impact across various financial dimensions, the magnitude, direction, and nature of this impact differed notably between the two banking models.

In terms of profitability, both deposit and participation banks experienced a decline in core performance indicators following Basel III implementation. For deposit banks, Basel III negatively affected Return on Assets ($\beta = -0.88$, $p < 0.01$), Return on Equity ($\beta = -9.42$, $p < 0.01$), Net Profit Margin ($\beta = -5.64$, $p < 0.001$), and Fee-Based Revenues ($\beta = -2.26$, $p < 0.001$). Participation banks also showed significant reductions in ROA ($\beta = -0.65$, $p < 0.05$), Net Profit Margin ($\beta = -5.44$, $p < 0.001$), and FCBSR ($\beta = -7.20$, $p < 0.001$), though the effect on ROE was not statistically significant. This suggests that profitability pressures intensified under Basel III for both bank types, with participation banks being

particularly vulnerable in non-interest income streams due to their Shariah-compliant structure.

Regarding efficiency, both banking models showed improvements in operational cost efficiency after Basel III. Deposit banks reduced operational expenses to average assets ($\beta = -0.448$, $p < 0.001$) and increased fee-based revenue relative to costs ($\beta = 3.341$, $p < 0.001$). Participation banks also reduced operational expenses ($\beta = -0.649$, $p < 0.001$) and significantly enhanced asset efficiency per staff member ($\beta = 184.91$, $p < 0.001$). However, Basel III had a negative impact on their FCBSR to operational expenses ($\beta = -19.85$, $p < 0.001$), reflecting structural limitations in their non-interest revenue generation. This divergence underscores the distinct cost-income dynamics shaped by the operational constraints of participation banking.

Liquidity structures also evolved differently between the two bank types. Deposit banks increased their Total Loans to Deposits ($\beta = 14.38$, $p < 0.001$) and Demand Deposits to Total Deposits ($\beta = 6.31$, $p < 0.001$), indicating aggressive liquidity deployment. Participation banks, by contrast, reduced their lending relative to deposits ($\beta = -9.92$, $p < 0.001$), but significantly increased demand deposits ($\beta = 9.99$, $p < 0.001$). Basel III had a notably negative impact on the Liquidity Requirement Ratio in both sectors, but the effect was far more pronounced in participation banks ($\beta = -21.35$ vs. -6.00), highlighting their strategic shift towards conservative liquidity management amid regulatory pressure and macroeconomic volatility.

On the solvency front, both bank types extended the maturity of their securities—deposit banks ($\beta = 469.5$, $p < 0.001$) and participation banks ($\beta = 257.29$, $p < 0.001$)—suggesting a long-term approach to balance sheet resilience. However, participation banks increased their total securities to deposits ($\beta = 13.10$, $p < 0.001$), while deposit banks reduced them ($\beta = -12.23$, $p < 0.001$), reflecting divergent asset allocation strategies. Basel III also led to higher debt-to-equity ratios in both sectors, more sharply in participation banks ($\beta = 2.98$ vs. 0.66). Both models saw declines in equity ratios, but again the effect was greater in participation banks ($\beta = -2.94$ vs. -0.78), indicating a more aggressive shift toward leverage-based solvency structures among participation banks.

In terms of capital adequacy, the Tier 1 Capital Ratio improved post-Basel III for both deposit ($\beta = 0.63$, $p < 0.01$) and participation banks ($\beta = 1.19$, $p < 0.1$). However, only deposit banks showed a significant improvement in the Capital to Risk-Weighted Assets ratio ($\beta = 1.22$, $p < 0.001$). Participation banks demonstrated a more pronounced reduction in their risk-weighted assets to total assets ($\beta = -32.18$, $p < 0.1$), suggesting a strategic shift toward lower-risk portfolios, possibly to buffer against capital shocks.

Lastly, risk management behaviors diverged strongly. Deposit banks experienced an increase in Non-Performing Loans ($\beta = 1.40$, $p < 0.01$) but reduced their provisioning ($\beta = -6.16$, $p < 0.001$), likely to preserve profitability. In contrast, participation banks maintained NPL stability but increased provisioning ($\beta = 6.19$, weakly significant), indicating a more conservative approach. Both sectors reduced off-balance sheet risks significantly, but the magnitude of reduction was more substantial in participation banks ($\beta = -80.78$ vs. -22.37), signaling their cautious retreat from contingent exposures in light of Basel III constraints.

In conclusion, Basel III significantly influenced the financial strategies and structural adjustments of both deposit and participation banks in Türkiye. While deposit banks leaned toward optimizing capital and profitability under regulatory pressure, participation banks exhibited a more defensive stance, prioritizing risk mitigation and liquidity buffers. These findings have important implications for regulators and policymakers, indicating that while Basel III enhances sector-wide resilience, its uniform application may produce asymmetric effects depending on the banking model. Tailored regulatory adjustments may therefore be necessary to ensure balanced compliance and stability across different financial architectures.

5.2 Recommendations for Policymakers and Industry

The findings of this study highlight that the implementation of Basel III had nuanced and asymmetric effects on deposit and participation banks, revealing the need for differentiated policy approaches. Policymakers must acknowledge that a one-size-fits-all regulatory framework may inadvertently impose disproportionate constraints, particularly on participation banks, whose operational structures differ significantly from deposit banking.

For participation banks, the most urgent regulatory challenge lies in liquidity management. The significant reduction in the Total Cash Loans to Total Deposits ratio (-9.92) and the strong negative effect on the Interest Sensitive Assets to Liabilities ratio (-12.15) underscore liquidity vulnerabilities. This highlights the necessity of developing Sharia-compliant high-quality liquid assets (HQLAs) that allow participation banks to comply with Liquidity Coverage Ratio (LCR) requirements without breaching the prohibition of interest. Moreover, Basel III's pronounced negative effect on the Liquidity Requirement Ratio (-21.35) further reinforces the need for customized liquidity instruments that enhance resilience while adhering to participation principles.

Regarding capital structure, participation banks increased their Debt to Equity ratios (+2.98) and experienced a significant decline in their Equity Ratio (-2.94), indicating a growing reliance on debt-based financing. While Basel III positively influenced their Core Capital Adequacy Ratio (Tier 1) (+1.19), the absence of a significant effect on the broader Capital to Risk-Weighted Assets Ratio suggests that risk-weighting methods may not fully capture the unique asset profiles of participation banks. Policymakers should consider revising capital adequacy frameworks to better reflect the risk-sharing nature of participation finance, potentially incorporating alternative risk-weighting metrics that are more aligned with asset-backed and participatory structures.

For deposit banks, the most critical area of concern is profitability, with Basel III exerting strong negative effects on Return on Equity (-9.42), Return on Assets (-0.88), and Net Profit Margin (-5.64). These results suggest that regulatory compliance, while improving stability, has come at the cost of profitability. Policymakers should support strategies that improve profitability through product diversification, digital innovation, and non-interest income generation, rather than through excessive operational cost-cutting, which could impair long-term growth.

In terms of risk management, the study reveals divergent approaches: while participation banks increased provisioning and reduced off-balance sheet exposures significantly (-80.78), deposit banks reduced their provisioning (-6.16) despite an increase in non-performing loans (+1.40). This asymmetry suggests a more risk-averse stance among participation banks, but it also implies potential over-conservatism. Regulators should

encourage participation banks to balance risk containment with growth potential, possibly through risk-sharing instruments and better access to participation hedging tools. Conversely, deposit banks should be incentivized to strengthen provisioning policies, particularly during high interest rate environments, where loan quality tends to deteriorate.

Finally, the study underscores the need for more comprehensive and dynamic stress testing frameworks that incorporate macroeconomic variables—especially asset size, interest rates, and inflation, all of which had significant effects across the models. These tests should be sensitive to the differentiated exposures of banking models, capturing how each responds to economic shocks under Basel III constraints. Incorporating tailored macroprudential oversight and model-specific scenario analysis will ensure that both banking systems are better equipped to sustain stability without compromising their core operational identities.

5.3 Limitations and Challenges of the Study

Despite offering a robust empirical evaluation of Basel III's impact on the Turkish banking sector, this study is subject to certain limitations that warrant acknowledgment. First, the research is geographically confined to Türkiye, which possesses a unique regulatory environment, economic context, and dual-banking system. While this national focus allows for an in-depth understanding of Basel III's localized implications, it also restricts the generalizability of findings to other jurisdictions with differing legal, institutional, and financial frameworks. Future studies should consider cross-country or regional analyses to validate whether the observed patterns in profitability, efficiency, liquidity, solvency, and risk management hold across diverse banking systems.

Second, the study relies exclusively on publicly accessible financial and macroeconomic data, including bank-level ratios and sectoral indicators. While this ensures transparency and replicability, it limits the capacity to assess the nuanced internal compliance strategies, stress-testing practices, and risk governance frameworks that banks may employ in response to Basel III. Access to regulatory filings, supervisory assessments, or internal audit reports could provide a more granular understanding of how Basel III is operationalized within institutions, particularly in areas like capital planning, provisioning behavior, and liquidity buffer management.

Moreover, although the models incorporate control variables such as interest rates, inflation, and asset size, the analysis does not fully account for broader macroeconomic shocks and structural factors—such as political instability, fiscal policy shifts, or global financial contagion—that may also influence banking performance. These omitted variables may exert significant influence, especially in emerging markets where external volatility can sharply affect credit growth, asset quality, and liquidity access.

Another methodological limitation lies in the linear regression framework itself. While diagnostic tests were conducted to ensure robustness, several models—particularly those involving efficiency and risk management ratios—show evidence of heteroskedasticity and non-normal residuals. These econometric irregularities suggest that alternative estimation techniques (e.g., generalized least squares, quantile regression, or dynamic panel models) might yield more precise and resilient inferences.

Finally, Basel III implementation remains an evolving process, especially in jurisdictions like Türkiye where phased adoption and regulatory reinterpretation continue to shape compliance trajectories. Therefore, the full long-term implications of Basel III—such as countercyclical buffer activation, stress test integration, and leverage ratio effectiveness—may not yet be fully observable. Continued monitoring and longitudinal studies will be essential to capture the dynamic interplay between regulation and financial performance in both participation and deposit banking models.

5.4 Directions for Future Research

Future research should investigate the long-term implications of Basel III on banking sector stability and financial innovation, especially in emerging markets where regulatory frameworks are still evolving. A valuable avenue would be to conduct comparative analyses involving Basel III, Basel IV proposals, and other international capital regulation frameworks to evaluate their relative effectiveness in fostering financial resilience and regulatory compliance.

An important area for further exploration is the effect of Basel III on financial inclusion and credit accessibility, particularly for small and medium-sized enterprises (SMEs). Since stricter capital and liquidity requirements may lead to more conservative lending

practices, it is critical to examine whether these regulatory reforms have unintentionally restricted credit flow to economically vulnerable or underserved groups.

Additionally, the integration of digital technologies and fintech into the banking sector offers a promising research frontier. Future studies should assess how digital banking platforms can support Basel III compliance by enhancing liquidity optimization, reducing operational inefficiencies, and improving credit risk assessment and reporting capabilities. The potential of artificial intelligence and data analytics in regulatory risk modeling also warrants deeper academic inquiry.

Finally, further research should focus on regulatory harmonization between participation and deposit banking systems. Given the unique operational principles of participation finance, particularly the prohibition of interest and reliance on asset-backed transactions, it is essential to explore how global regulatory standards such as Basel III can be adapted to support Sharia-compliant practices while still preserving financial stability. Such work would contribute to a more inclusive and globally integrated financial regulatory environment.

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APPENDIX-A. Test Results

TEST RESULTS	Deposit Banks				Participation Banks			
Tests for Models	Heteroskedasticity	Linearity	Multicollinearity	Normality Test on residual	Heteroskedasticity	Linearity	Multicollinearity	Normality Test on residual
Model Name	GQ_p value	RESET p value	Max VIF	Shapiro p value	GQ p value	RESET p value	Max VIF	Shapiro p value
Net Income / Average Total Assets (%)	0.8955	0.0316	2.4612	0.7030	0.6557	0.3325	2.7091	0.0207
Net Income / Average Shareholder's Equity (%)	0.8688	0.0021	2.4612	0.9303	0.1983	0.4198	2.7091	0.0268
Net Interest (Profit) Revenues (Expenses) / Average Total Assets (%)	0.2230	0.1937	2.4612	0.3033	0.1219	0.7851	2.7091	0.4338
Net Profit Margin (%)	0.0126	0.0005	2.1726	0.7801	0.0003	0.0064	2.3038	0.0001
Fees. Commission and Banking Services Revenues / Total Revenues (%)	0.1090	0.0000	2.1726	0.0094	0.7801	0.5135	2.3038	0.0028
Operational Expenses / Average Total Assets (%)	0.0000	0.0000	2.1726	0.1251	0.0000	0.0069	2.3038	0.0003
Fees. Commission and Banking Services Revenues / Operational Expenses (%)	0.0000	0.0000	2.1726	0.0000	0.0000	0.0001	2.3038	0.0000
Average Total Assets / Average Number of Total Staff	0.8392	0.0183	2.0976	0.5797	0.9735	0.1778	2.5471	0.5051
Operating Expenses / Total Revenue (%)	1.0000	0.0000	2.0800	0.0000	0.0000	0.0001	2.3613	0.0000
Total Cash Loans / Total Deposit (Funds Collected) (%)	1.0000	0.3303	2.1726	0.0038	0.1733	0.1928	2.3038	0.0272
Demand Deposit (Funds Collected) / Total Deposit (Funds Collected) (%)	1.0000	0.1737	2.1726	0.0107	0.0004	0.0891	2.4143	0.4429

TEST RESULTS	Deposit Banks				Participation Banks			
Tests for Models	Heteroskedasticity	Linearity	Multicollinearity	Normality Test on residual	Heteroskedasticity	Linearity	Multicollinearity	Normality Test on residual
Model Name	GQ_p value	RESET p value	Max VIF	Shapiro p value	GQ p value	RESET p value	Max VIF	Shapiro p value
Total Securities / Total Deposit (%)	0.0002	0.0000	2.1726	0.0005	0.0000	0.0000	2.3038	0.0001
Debt to Equity Ratio	0.8429	0.8945	2.1726	0.2090	0.0001	0.0404	2.3038	0.0004
Equity Ratio (%)	1.0000	0.0000	2.1726	0.0000	0.2926	0.0165	2.3038	0.0000
Regulatory Capital / Total Risk Weighted Assets (%)	0.9954	0.0825	2.1726	0.0000	0.9999	0.0000	2.3038	0.1222
Core Capital Adequacy Ratio	1.0000	0.0035	2.1726	0.0000	1.0000	0.0000	2.3038	0.0000
Total Risk Weighted Assets (Net) / Total Risk Weighted Assets (Gross) (%)	0.0000	0.0000	2.1726	0.0000	0.9530	0.8020	2.4746	0.6948
Non-Performing Loans (Gross) / Total Cash Loans (%)	1.0000	0.0000	2.1726	0.3634	0.0000	0.0000	2.3038	0.0000
Provision for Non-Performing Loans / Gross Non-Performing Loans (%)	0.0413	0.0817	2.1726	0.0000	0.0907	0.0021	2.3038	0.0000
Off Balance Sheet Risks - Derivative Financial Instruments / Total Assets (%)	0.9992	0.0392	2.1726	0.0031	1.0000	0.0246	2.3038	0.0067

Source: Author, 2025

CV

Ahmet Enes Çetinkaya

PERSONAL PROFILE

Commercial airline pilot holding a B.Sc. degree in professional flight. Professional in Economics holding a B.A. degree and pursuing an M.Sc. degree in Islamic Economics. Strong problem-solving, collaboration and fast learning skills, able to work with cross-disciplinary teams.

EDUCATION

Sabahattin Zaim University — Istanbul, TÜRKİYE
M.Sc. in Islamic Economics — 2022 - Current

- **Honors**: 100% Performance Scholarship

Ozyegin University — Istanbul, TÜRKİYE
B.A. in Economics — 2018 - 2022

- **Honors**: Rank 1st in class - High honor graduation

Ozyegin University — Istanbul, TÜRKİYE
B.Sc. in Professional Flight — 2016 - 2021

- **Honors**: Rank 2nd in class - 100% Performance Scholarship - High honor graduation

Çapa Fen High School — Istanbul, TÜRKİYE
High School — 2012 - 2016

EXPERIENCE

Turkish Airlines — Istanbul, TÜRKİYE
Pilot (First Officer) — 2022 - Current

- 600+ Hours of Boeing 737 Flight Hours

AYJET Flight School — Istanbul, TÜRKİYE
231:45 hours of Flight Experience — 2016-2021

SKILLS & CERTIFICATES

- **Computer Skills:** MS Office, Swift UI, Python, Stata, MATLAB, Rapid Miner, R Studio
- **Certificates:** CPL License, Average ATPL exam score of 96, IELTS Exam Score of 7.0 (24.10.2019)

LANGUAGES

- **English:** Professional working proficiency
- **Turkish:** Native
- **German:** Beginner (A2)