Journal of
Risk and Financial Management

MDPI

Article

Evaluating the Profitability Implications of IFRS 9 in Cambodian Banking Institutions

Kosla Hin, Bunthe Hor and Siphat Lim *

Department Accounting and Finance, CamEd Business School, Phnom Penh 120211, Cambodia
* Correspondence: lsiphat@cam-ed.com

Abstract

This research adds to the existing literature by examining the impact of IFRS 9 in a context where accounting reforms, prudential regulation and credit growth are strongly intertwined. Studies examining the impact of IFRS 9 implementation on profitability for banks provide inconclusive evidence. We find that our results are both robust to static panel estimators and strengthened by dynamic specifications. The transition from an incurred loss to an expected credit loss (ECL) model thus entails short-term profitability costs by bringing forward credit impairment recognition, increasing provisioning and lowering reported earnings. Results show that NPLs and leverage have a persistent negative impact on ROA, while a larger bank size and cash contribute positively to profitability. Liquidity is negatively related but statistically insignificant, indicating that its role is primarily a prudential rather than an earnings component. Given that, in dynamic models, higher GDP and inflation lead to lower profitability at the macroeconomic level, and expansionary conditions do not improve bank performance even if expected loss recognition increases or operating expense falls. IFRS 9 is hence a possible source of major institutional reform with real influence on financial outcomes, risk appetites and the strength of Cambodia's banking sector in general.

Keywords: return on asset; IFRS 9; static panel data models; dynamic panel data model

Check for updates

Academic Editor: Thanasis Stengos

Received: 11 June 2026
Revised: 16 July 2026
Accepted: 21 July 2026
Published: 1 August 2026

Copyright: © 2026 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

1. Introduction

One of the most impactful and fundamental reforms impacting commercial banks is the implementation of IFRS 9, through which financial assets are classified, measured and impaired differently. Under the International Accounting Standard (IAS) 39 regime, banks recognize credit losses using the incurred loss approach, which causes delays in recognition of impairment losses. However, IFRS 9 replaces the incurred loss approach with a forward-looking expected credit loss (ECL) model that requires earlier recognition of credit deterioration along with incorporation of macroeconomic expectations into the methodology used to measure impairments. Such a reform is especially relevant for commercial banks, where the ex ante loss absorption capacity is heavily weighted due to the non-diversified asset structure of loan portfolios and financial instruments and high heterogeneity in profitability associated with credit quality, provisioning behavior and capital adequacy. Consequently, IFRS 9 is less a reporting change and more a regulatory and informational overhaul with implications for bank profitability, risk recognition, and financial viability (Collaku et al., 2021; Ma et al., 2022; Ricapito, 2024).

The theoretical and empirical literature on bank profitability has long identified that return on assets (ROA) is one of the most widely accepted measures of banking perfor-

mance, since this standardizes the level of efficiency with which management is able to turn total assets into net income. Previous research indicates that bank profitability is influenced by internal factors, including capital adequacy, liquidity, leverage, asset quality, size, deposits and operating efficiency, as well as by macroeconomic determinants such as GDP growth, inflation and market structure. Further data from developing economies indicates that these determinants may function in institutional settings; therefore, global comparisons of commercial bank profitability require context-specific inquiry (Akther et al., 2023; Al-Harbi, 2019; Demirgüç-Kunt & Huizinga, 1999; Ebenezer et al., 2017; Isayas, 2022).

Accompanying this profitability literature, an increasing number of studies have investigated the role of IFRS adoption in affecting the accounting numbers used to measure financial performance and its consequences. Accounting reforms may not have the same impact on all dimensions of performance; for example, IFRS adoption was positively associated with return on equity (ROE), liquidity and leverage in the Ethiopian banking sector but had no statistically significant effect on ROA (A. A. Abebe, 2022). IFRS adoption and accounting quality were linked to banks' performance and efficiency, which means that IFRS and high-quality reporting may enhance operational performance and stability for financial institutions in Pakistan (Ma et al., 2022). Likewise, in the case of Germany, it was shown that IFRS adoption improved firm performance and redefined the relevant capital structure–performance relationship, indicating that it achieved its goal of establishing a new balance in performance variables after major accounting reforms (Abdullah & Tursoy, 2021).

While the immediate impact of IFRS 9 on assets and capital ratios proved to be statistically weak, its adoption led to an instant surge in loan loss allowances, prompting pressure for re-adjustment of capital ratios in Kosovo (Collaku et al., 2021). In the European banking sector, significant developments associated with IFRS 9 have been noted in credit risk measurement, provisioning for credit losses by banks, capital adequacy requirements and non-performing loans, which, after both system-wide and entity-level stress testing for profitability effects and internal risk management applications, carry compelling implications (Ricapito, 2024). Despite the diverse operational environment, evidence from Romanian credit institutions shows how IFRS 9 influences financial performance and sustainability through recognition of fair value measurements and expected credit losses. Although recognizing fair value so that changes therein are charged as profit or loss is associated with positive performance effects, expected credit loss recognition brings elements of short–medium-term financial instability. These results provide empirical evidence to support the view that IFRS 9 implementation can affect profitability via a plurality of channels, for instance, increased provisions and changes in asset valuation modalities or modifications in capital management responses (Grosu et al., 2025).

The impact of IFRS 9 is not limited to profitability levels; it also relates to accounting information quality and comparability. More recently, it was shown that the implementation of IFRS 9 led to an overall reduction in accounting comparability among banks, with the ECL model constituting the main determinant behind this decline; however, some improvements in classification and measurement changes or hedge accounting rules displayed potential to enhance comparability. Moreover, this is important because profitability ratios like ROA are only as good as the accounting data used to calculate them. IFRS 9 improves timeliness but at the cost of comparability across banks, leading to a more nuanced interpretation of post-adoption profitability measures (Fontes et al., 2025).

Expounding the findings from the literature also uncovers ambiguous results among banking structures in Africa. While data on the implementation of IFRS 9 indicates that it had discernible topical effects on liquidity and profitability, these were characterized as somewhat narrow in the short run, with benefits tied to transparency and decision usefulness, while challenges arose around the complexity of implementation, staff training

and model development costs (Karanu, 2019). Similar studies related to IFRS in Ethiopia also argue that accounting reforms and profitability determinants need to be understood within the context of developing financial systems characterized by regulatory frameworks that are not fully developed and limited institutional capacity, as well as volatility in economic conditions that affects both the reporting regime and financial performance. These country-level variations suggest that the effects of IFRS 9 cannot be mechanically extrapolated across jurisdictions (A. A. Abebe, 2022; Isayas, 2022).

At least three substantive gaps persist in this maturing literature. First, a substantial portion of the bank profitability literature continues to be centered on standard firm-specific and macroeconomic determinants without explicitly modeling IFRS 9 adoption as a possible explanatory factor. Second, most of the studies on IFRS 9 concentrate more on impairment mechanics, capital adequacy, credit risk, comparability, sustainability, etc., while this study focuses purely on analyzing its impact on commercial bank performance based on ROA. Third, despite a handful of empirical observations in Cambodia, the evidence is overwhelmingly European and South Asian, with some African jurisdictions engaged. The significance of this omission should not be understated since the effects of IFRS 9 are expected to differ across countries based on respective banking structures, supervisory practices and institutional capacity, as well as the quality of loan portfolios.

This makes the Cambodian context an important environment through which to further the literature. As in several developing economies, commercial banking in Cambodia is characterized by a deep overlap between accounting reform, prudential regulation and credit expansion. While moving to an ECL framework may hinder reported profitability in the near term through timelier recognition of impairment and increased provisioning, it also has the opportunity to strengthen its informational content for reported earnings and long-run risk management. However, whether IFRS 9 adoption constrains or supports overall profitability, as measured by ROA, remains an empirical question that necessitates direct investigation.

This study fills that gap by investigating the effect of IFRS 9 adoption on commercial bank profitability using return on assets to measure bank profitability in Cambodia. ROA shows how much profit banks can generate from their total asset base and has long been used as the dependent variable of choice in a number of past studies on bank performance, making it an apt choice as a dependent variable (A. A. Abebe, 2022; Akther et al., 2023; Ebenezer et al., 2017; Isayas, 2022). In the case of IFRS 9, ROA is particularly informative because all parts of the ratio, i.e., net income and total assets, are affected by both expected credit losses coming in and changes to classification and measurement rules for financial instruments. Based on ROA, it would then tell a narrow story regarding whether IFRS 9 adoption has had a significant impact on bank profitability in Cambodia.

The study contributes to the literature in two ways. First, it extends the evidence on IFRS 9 beyond well-studied jurisdictions by providing country-specific insights from Cambodia. Second, it links the accounting reform literature to the bank profitability literature by examining whether a major financial reporting change is associated with a key measure of operational performance. The findings are expected to be relevant to regulators, bank executives, investors, and standard setters concerned with the consequences of IFRS 9 on banking sector profitability, transparency, and resilience in emerging economies.

The structure of this research is classified into five sections. The introduction that describes the background, research gap, and objective of the study is presented in Section 1. A synthesis of theoretical evidence and an empirical literature review are provided in Section 2. Section 3 explains the research methodology, which includes panel data model specification, data collection and analysis. Sections 4 and 5 discuss the empirical results and provide a conclusion and policy implications, respectively.

2. Literature Review

2.1. IFRS 9, Expected Credit Loss, and Bank Profitability

IFRS 9 replaced the accounting treatment of financial instruments, which was previously under IAS 39, transitioning from an incurred loss model to an ECL model. The literature mainly frames this transition as an effort to address the timeliness of loss recognition, enhance credit risk provisioning and mitigate cliff effects with the adoption of IFRS. To some pluralistic extent, the roguish architecture of IFRS 9 itself contributes both greater management discretion and modeling complexity, and complementary least strategies use macroeconomic assumptions that could upgrade or degrade reporting performance bestowed by institutional bisectoral endowments and regulatory dividends (Al-Hanandeh et al., 2026; Nnadi et al., 2023; Yu et al., 2024).

The existing empirical literature shows that the effect of IFRS 9 on profitability is not a consistent one. A number of studies claim that performance can be enhanced through IFRS 9 as it would strengthen risk recognition and provisioning discipline. For instance, the implementation of IFRS 9 enhanced ROA and consequently ROE for commercial banks in Kenya, where huge provisions were anticipated to lessen earnings significantly (Ongalo & Wanjare, 2022). At the same time, an evidence-based study from the Middle East justifies the large positive relationship between ECL, ROA and ROE, while capital adequacy serves to mediate only part of this lending, as banks with a high endowment of capital are superior in linking forecast provisioning into higher performance (Al-Hanandeh et al., 2026). Positive and, in many cases, statistically significant improvements in financial performance across multiple predictors following IFRS 9 adoption or compliance are reported for Jordan and Iraq, all largely correlated with better credit quality indicators, lower financial risk indicators and improved usefulness in financial statements (Neamah, 2024).

A second stream of the literature is more guarded and highlights unintended consequences. That is, in Europe, IFRS 9 has been associated with sustained earnings management through loan loss provisions, particularly for non-listed banks, and audit quality seems unable to fully restrain this behavior (Nnadi et al., 2023). Accordingly, research further argues that IFRS 9 implementation can reduce the transparency level of assets and worsen asymmetric information issues in the Asia-Pacific banking context, which had implications for earnings forecasts and value relevance. The results are also mixed at the market level. Although IFRS 9 implementation did not improve firm value across all MENA banks, classification of financial assets under IFRS 9 mattered for valuation outcomes, and delayed adoption in Indonesia seems to have yielded lower value-relevance benefits than early adoption in Malaysia (Utami et al., 2025).

Previous evidence proves that the impact of IFRS 9 on returns can be realized both directly and indirectly. In direct terms, it can affect profitability by changing the sources of income and how financial metrics are measured. In turn, that could indirectly affect profitability by leading to refinements in financial reporting practices, yielding reactions on the part of markets and shaping regulatory enforcement mechanisms. The multidimensionality of these effects suggests that, in addition to affecting accounting practices, the implementation of such standards has interconnectivity with both broader market dynamics and regulatory frameworks, which leads to an intricate relationship between IFRS 9 and corporate performance (Ben Ltaief & Moalla, 2026; Jasman et al., 2026).

In a systematic review, it was explained that, despite the extensive body of post-2018 literature on the bank-level effects of IFRS 9, mainly covering financial reporting behavior and capital implications at banks, studies on macroeconomic effects are still relatively rare. The review also illustrates that the benefits of IFRS 9, including more forward-looking recognition of losses and better presentation in financial statements, are accompanied by

a higher degree of volatility, greater data requirements and increased opportunities for earnings management (Yu et al., 2024).

2.2. Non-Performing Loans and Asset Quality

Non-performing loans (NPLs) and other closely related asset quality measures are among the most robust negative determinants of profitability by bank-specific determinants in the literature. Research from Hungary, Bangladesh, Ethiopia, China, India and Central and Eastern Europe typically shows that profitability is negatively affected by a decline in the quality of banks' assets either because of worsening impairment charges, a drop in earning assets or higher reserves. A Hungarian study on commercial banks observed that non-performing loans play a detrimental role in diminished profitability (Serwadda, 2018). By studying parasitic feedback loops of social media, it was found that high loan loss provisions with lower credit quality are what pull the return on assets of Chinese state-owned commercial banks down to lower levels (Islam & Rana, 2019; Rumaly, 2023; Koroleva et al., 2021). Ethiopian evidence also indicated that non-performing loan advances adversely influence measures of profitability. The observed results are highly consistent with IFRS 9 reasoning, as the ECL framework directly associates expected declines in credit quality with provisioning and earnings (B. Abebe & Ali, 2025). The profitability effect of NPLs may become stronger after adoption, as IFRS 9 recognizes expected losses earlier than incurred loss regimes. Put another way, the negative relation between NPLs and ROA is not only an operational problem; under IFRS 9, it is also an accounting timing issue whereby expected deterioration goes through earnings much sooner (Al-Hanandeh et al., 2026; Ongalo & Wanjare, 2022; Yu et al., 2024).

2.3. Leverage

A measure closely related to profitability is leverage, typically represented by the ratio of total liabilities to total assets, which has been extensively studied in the literature. Although there is evidence that supports the existence of a positive relationship between high leverage and profitability, most of the literature supports the opinion that higher leverage tends to add to risk and financing pressure, making earnings volatile and leading to decreases in profitability levels. A negative relationship between leverage and both ROA and ROE exists among Ethiopian commercial banks (B. Abebe & Ali, 2025). Rumaly (2023) endorses this assertion, stating that well-focused financing structures and higher equity-to-debt ratios directly influence profitability, as affirmed by Almaqtari et al. (2019). Moreover, Al-Eitan et al. (2022) describe financial leverage as one of the key drivers of profitability for Jordanian banks. In fact, IFRS 9 may have made leverage even more relevant, as an increase in provisioning needs transmits faster into earnings and regulatory capital positions. Another IFRS-related channel is the way leverage affects profitability. Leverage is explicitly included as a control in modeling the IFRS 9–profitability relationship, and based on prior evidence, it has also been noted that leverage sensitivity may be lessened following adoption of IFRS 9 because provisioning relates to fewer objective determinants, with more forward-looking estimates (Al-Hanandeh et al., 2026).

2.4. Bank Size

One of the most contested questions in the banking literature is the effect bank size (SIZE) has on profitability. An oft-repeated argument is that the likes of larger banks have economies of scale, broader diversification options, greater market power and greater ability to invest time in their data, compliance and risk frameworks. This positive perception is evident in studies on Hungary, Ethiopia, India, Jordan, Bangladesh and China, where larger banks are usually associated with higher profitability or strong performance indicators (Serwadda, 2018; B. Abebe & Ali, 2025; Almaqtari et al., 2019; Al-Eitan et al., 2022; Koroleva

et al., 2021). Finally, large banks may have a second implementation advantage under IFRS 9 because they can do better internal modeling and often have a higher-quality data infrastructure that helps in ECL estimation and reduces profit shocks stemming from the transition (Al-Hanandeh et al., 2026). Nevertheless, the literature is for and against this perception as well. Others argue that a larger size can hurt profitability when banks become too complex, bureaucratic or operationally expensive. Al-Hanandeh et al. (2026) note a negative size effect on ROE. Smaller banks, for some specifications, have a more favorable profitability effect on ECL. Such opposing results imply that the size–profitability relationship might be nonlinear and context-dependent (Rumaly, 2023).

2.5. Liquidity: Liquid Assets to Total Assets and Cash to Total Assets

A wide range of ratios has been applied to liquidity risk selection, often measured by liquid assets to total assets (LIQ), cash and cash equivalents to total assets (CASH). However, no clear signal emerges from the literature, which brings one line of reasoning that higher liquidity fosters resilience, lowers distress costs and relieves depositor confidence; a second argument states that excessive liquidity has an opportunity cost because liquid assets usually earn a lower return than loans and other earning assets. Bagh et al. (2017) summarize earlier empirical research that found a positive or negative relationship between liquidity and profitability. However, Serwadda (2018) shows that liquidity was an impediment to the profitability of Hungarian banks. It was found that the superior profitability of state-owned banks in China encourages banks' liquidity, as total cash and short-term investment, which combine into one ratio with total assets, positively impact profitability (Koroleva et al., 2021). Likewise, empirical results in Ethiopia also found that liquidity has a significant and positive effect on profitability (B. Abebe & Ali, 2025).

2.6. Real GDP Growth

Macroeconomic conditions will always be at the core of any profitability model, where one of the most used indicators is GDP growth rate. The literature posits that GDP growth would lead to an increase in loan demand, repayment capacity and credit expansion as profitability rises. Onofrei et al. (2018) and Jílková and Kotěšovcová (2022) offer solid proof of the favorable macroeconomic results of GDP on profitability, including a wide variety of monetary prerequisites. This association is shown in Turkey and across the globe, although Ethiopian work suggests that GDP has little effect (B. Abebe & Ali, 2025). Likewise, Rumaly (2023) and Islam and Rana (2019) state that the effect of GDP on profitability depends on the empirical model in use and the profitability metric chosen. Interestingly, in some cases, the findings offer evidence that GDP has negative or neutral effects on good governance, an indication of the complexity regarding this macro policy outcome. Such mixed evidence reinforces the importance of additional investigations focusing on conditional determinants of the direction and strength of GDP effects on profitability across economies. Koroleva et al. (2021), for instance, found that GDP caused profitability in China's state-owned banks to form a negative relationship, partly because policy lending at low interest rates may attenuate the positive transmission from macroeconomic growth to bank profits. Rumaly (2023) cites studies in which GDP growth has adversely affected profitability. These findings suggest that the relationship may well depend on banking structure, competition, directed lending and policy mandates.

2.7. Inflation

The second macroeconomic determinant that also provides heterogeneous empirical evidence is inflation. In a moderate inflation environment, although funding and operating costs rise, lending rates should react sufficiently quickly to sustain interest spreads for banks, which may cause higher margins to widen accordingly. On the other hand, with-

out complete rate changes, this will just cut down real returns and lift general working costs and borrowing repayment ability, while hitting net revenue creation (Rumaly, 2023). Meanwhile, B. Abebe and Ali (2025) argue that profitability is not affected by inflation, as there is a negative causal relationship between ROA and inflation; however, the association was reversed when profitability was measured using ROE. In contrast, research in Bangladesh confirms a significant negative effect of inflation on both ROA and ROE (Islam & Rana, 2019). However, the results of Jílková and Kotěšovcová (2022) also indicate that the direction of this effect is yet to be fully understood.

2.8. Synthesis and Research Gap

In conclusion, the synthesis of prior research studies points to three broad conclusions. To begin with, IFRS 9 is not a neutral change in accounting standards; it fundamentally changes the way loan losses are accounted for and reported and has implications across incentives to report loan losses, capital dynamics and, in some cases, even market valuation of banks. Second, although a bank-specific and macroeconomic variable mix persistently shapes the profitability of banks, that effect is institution-dependent in both direction and level. The literature also continues to be strongly skewed towards Europe, the Middle East, South Asia and a few African contexts, with evidence still scarce in smaller developing banking systems. Cambodia is one country where this gap stands out. None of the studies found were directly relevant to research on the Cambodian banking system, and only a small number of studies examined IFRS 9 in relation to ongoing concerns about the simultaneous effects of NPLs, leverage, size, liquidity, cash holdings, GDP growth and inflation within either frontier or emerging Southeast Asian economies. The extant literature thus makes a solid theoretical and empirical case for a study set in Cambodia, yet it also allows many opportunities for an original contribution. Specifically, an investigation focusing on Cambodia can enrich the literature by examining whether substantial mixed international evidence on IFRS 9 and bank profitability persists in a relatively small, developing environment with a bank-dominated financial structure.

3. Methodology

In order to meet the objectives of the study, static and dynamic panel data models are employed to evaluate the influence of the adoption of IFRS 9 on Cambodian commercial banks' profitability. In addition to the target variable, IFRS 9 adoption, this study also incorporates bank characteristic indicators, for instance, non-performing loans (NPL), leverage (LEV), bank size (SIZE), liquidity (LIQ), and cash (CASH). Moreover, to control for economic cycles, two macroeconomic indicators are also included in the model: real GDP growth (GDP) and inflation rate (INF). The static model includes pooled ordinary least squares (POLS), random effects (REs), and fixed effects (FEs) models, where the dynamic model is implemented using two-step Generalized Method of Moments (GMM). All model specifications are presented as follows.

Let $i = 1, \ldots, N$ index banks and $t = 1, \ldots, T$ index time. The dependent variable is return on assets (ROA), and let the regressor vector for bank i at time t be:

$$x_{it} = [1\ IFRS9_{it}\ NPL_{it}\ LEV_{it}\ SIZE_{it}\ LIQ_{it}\ CASH_{it}\ GDP_{it}\ INF_{it}]'$$

The parameter vector is

$$\beta = [\beta_0\ \beta_1\ \beta_2\ \beta_3\ \beta_4\ \beta_5\ \beta_6\ \beta_7\ \beta_8]'$$

The standard panel data model in matrix form is

$$y = X\beta + u \tag{1}$$

where **y** is the ($NT \times 1$) stacked vector of $\mathrm{ROA_{it}}$, **X** is the ($NT \times K$) stacked regressor matrix, $K = 9$, and **u** is the ($NT \times 1$) disturbance vector. The general panel data model indicated in Equation (1) is the starting point of pooled OLS, random effects, fixed effects, and dynamic panel estimators (Wooldridge, 2010; Baltagi, 2021).

3.1. Pooled OLS (POLS) Model

The matrix specification of the pooled OLS model is

$$y = X\beta + \varepsilon, \tag{2}$$

With estimator

$$\hat{\beta}_{POLS} = \left(X'X\right)^{-1} X'y$$

In the pooled OLS model, β_0 is composed of a single intercept for all banks and all periods, and $\beta_1, \ldots, \beta_8$ are slope coefficients presumed to be identical in the full sample. The disturbance vector encompasses every unobserved influence of ROA not represented by the observed regressors. The key assumptions of the model are zero conditional mean, homoscedasticity, and no serial or cross-sectional dependence in the error, as indicated below.

$$E(\varepsilon|X) = 0, \quad Var(\varepsilon|X) = \sigma_\varepsilon^2 I_{NT}$$

Pooled OLS considers the panel as one large, combined sample, disregarding unobserved bank-specific heterogeneity. Hence, the coefficient β_1 captures the average pooled relationship between IFRS 9 adoption and ROA across all banks and times. Therefore, this estimator is helpful as a baseline specification but will be subject to omitted variable bias if between-time-invariant bank attributes are correlated with the regressors. It has been known for a long time in the broader panel data literature that pooling is simple but often inappropriate when there are individual-specific effects (Wooldridge, 2010; Baltagi, 2021).

3.2. Random Effects (RE) Model

Let Z denote the ($NT \times K$) incidence matrix that maps each stacked observation to its bank. The random effects model is

$$y = X\beta + Z\mu + \varepsilon, \tag{3}$$

or, equivalently,

$$y = X\beta + u, \quad u = Z\mu + \varepsilon,$$

where μ is the ($N \times 1$) vector of bank-specific random effects and ε is the ($NT \times 1$) idiosyncratic error vector. The estimated method is the feasible general least square estimator, which is

$$\hat{\beta}_{POLS} = \left(X'\Omega^{-1}X\right)^{-1} X'\Omega^{-1}y,$$

with

$$\Omega = Var(u) = \sigma_\mu^2 ZZ' + \sigma_\varepsilon^2 I_{NT}$$

The β parameters maintain the same economic interpretation as they do in pooled OLS. The additional term μ accounts for unobserved, time-invariant, bank-level heterogeneity. On the economic front, this could take the form of differences in governance, ownership structure, franchise value expectations (or claims), internal risk culture or business model

that may prove stubbornly difficult to reconcile. The term ε captures temporary shocks that differ across banks and, potentially, over time, for example, in the form of short-run operational, credit or market shocks (Wooldridge, 2010; Baltagi, 2021). Moreover, the following represent the key assumptions of the model,

$$E(\mu) = 0, \quad E(\varepsilon) = 0,$$

$$Var(\mu) = \sigma_{\mu}^{2} I_{N}, \quad Var(\varepsilon) = \sigma_{\varepsilon}^{2} I_{NT},$$

$$Cov(\mu, \varepsilon) = 0, \quad Cov(\mu, X) = 0.$$

3.3. Fixed Effects (FE) Model

The matrix specification of the fixed effects model is

$$y = D\alpha + X^{*}\beta^{*} + \varepsilon,$$

where **D** is the $(NT \times N)$ matrix of bank dummies, α is the $(N \times 1)$ vector of bank-specific intercepts, X^{*} is the matrix of regressors that excludes the common intercept, and β^{*} is the corresponding slope vector. Moreover, the within-transformed form is:

$$\widetilde{y} = \widetilde{X}\beta^{*} + \widetilde{\varepsilon},$$

where

$$\widetilde{y} = My, \widetilde{X} = MX^{*}, \widetilde{\varepsilon} = M\varepsilon,$$

and

$$M = I_{NT} - D\left(D'D\right)^{-1}D'$$

The FE estimator is

$$\hat{\beta}_{FE} = \left(\widetilde{X}'\widetilde{X}\right)^{-1}\widetilde{X}'\widetilde{y}$$

In the FE estimation model, α holds bank-specific intercepts that absorb all time-invariant heterogeneity. That is, the baseline profitability level may differ across banks. Slope coefficients in β^{*} are identified solely from out-of-time variation within banks. The remaining error term is the usual ε, which accounts for transitory shocks not explained by the regressors after purging out the time-invariant bank effect. The key FE condition is

$$E(\varepsilon|X, \alpha) = 0$$

While in the RE situation, the unobserved bank-specific effects are assumed to be uncorrelated with the regressors present in the model, in the FE situation, they can be correlated. This is exactly one of the primary benefits of the FE model. The model is, therefore, particularly suitable when excluded time-invariant variables are considered to be correlated with the main variables of interest, for example, credit risk, leverage or liquidity. This is a classic FE–RE comparison, and it connects directly to the specification testing logic Hausman built into the framework of the models (Wooldridge, 2010; Baltagi, 2021).

3.4. Dynamic Panel Data Model

Since bank profitability is often persistent, a dynamic specification includes the lagged dependent variable. Let Ly denote the stacked lagged ROA vector. The model is

$$y = \rho Ly + X\beta + Z\mu + \varepsilon$$

In scalar form, this corresponds to

$$ROA_{it} = \rho ROA_{it-1} + \beta_1 IFRS9_{it} + \beta_2 NPL_{it} + \beta_3 LEV_{it} + \beta_4 SIZE_{it} + \beta_5 LIQ_{it} + \beta_6 CASH_{it} + \beta_7 GDP_{it} + \beta_8 INF_{it} + \mu_i + \varepsilon_{it} \quad (4)$$

Parameter ρ is the autoregressive coefficient, which captures the persistence of ability. ROA is persistent but mean-reverting if $0 < \rho < 1$. Values around one indicate the persistence of bank profitability. β_1 captures the short-run effect of IFRS 9 adoption. In the case of stability, $|\rho| < 1$, the long-run effect can be expressed as follows:

$$\frac{\beta_1}{1-\rho}$$

The error structure again consists of a bank-specific time-invariant effect μ_i and an idiosyncratic innovation ε_{it}. The issue is that once fixed effects are included, the lagged dependent variable becomes correlated with the composite error term. For small T, this creates the classic dynamic panel bias of standard FE estimation. Dynamic panels are usually estimated with GMM procedures instead of static FE whenever the lagged dependent variable is included because of this bias (Nickell, 1981).

Under some conditions, including no serial correlation between idiosyncratic errors, Arellano and Bond (1991) developed a GMM estimator for dynamic panel models that relates to assumptions about the error terms by substituting lagged levels of the endogenous variables as instruments for the differenced equation. Blundell and Bond (1998) later pointed out that for highly persistent variables, difference-GMM instruments can be weak; thus, they introduced the system GMM approach, which simply adds a levels equation to the differenced equation instrumented by lagged differences. As persistence and endogeneity are both relevant, these estimators have become the standard in empirical research on firm performance and, more recently, bank performance.

A compact GMM representation is

$$\hat{\theta}_{GMM} = \left[(Q'W)A^{-1}(W'Q)\right]^{-1}(Q'W)A^{-1}(W'y),$$

where $\theta = [\rho, \beta']'$, $\boldsymbol{Q}$ is the transformed regressor matrix, $\boldsymbol{W}$ is the instrument matrix, and $\boldsymbol{A}$ is the GMM weighting matrix.

The lagged dependent variable, ROA, is considered endogenous and instrumented using deeper lagged values. Bank-specific variables such as NPLs, leverage, liquidity, cash holdings and bank size are considered predetermined due to the fact that current profitability may influence future credit qualities, capital structure decisions and liquidity position. Thus, their past values serve as internal instruments. The exogenous or weakly exogenous variables are IFRS 9, GDP growth and inflation because the determination of an individual bank's profitability is held outside. The instrument set is limited to suitable lag lengths in order to mitigate the risk of instrument proliferation and is tested using the Hansen over-identification test and Arellano–Bond serial correlation tests.

Although the sample comprises 26 banks over 12 years, the system GMM estimator is considered appropriate because the panel has a relatively small cross-sectional dimension and a moderate time dimension. To avoid instrument proliferation, the number of instruments was restricted and kept below the number of cross-sectional units.

The study adopted a parsimonious instrument strategy when estimating using dynamic panel GMM to control for instrument proliferation. The first lag of ROA was considered endogenous and instrumented by the second and third available lags of ROA. We treated non-performing loans and leverage as endogenous variables, instrumented with the second and third lags of each variable. We classified bank size, liquidity and cash

holdings as predetermined variables and used their first and second lags as instruments. IFRS 9, GDP growth and inflation were incorporated as standard IV-style instruments. Moreover, to reduce the number of moment conditions, we collapsed the instrument matrix. This specification avoided producing an instrument count higher than the cross-sectional unit count, thus helping to reduce instrument proliferation and its associated weakening.

3.5. Data

This analysis extends coverage from 2013 to 2024, a period of twelve years. The sample consists of 26 commercial banks with full data across the study period, providing 312 bank-year observations in total and allowing for a balanced panel dataset. Values for all variables are measured in percent, with the exception of IFRS 9 and bank size. Instead, IFRS 9 is defined as a dummy variable that takes the value of 1 for the years from 2019 to 2024 and 0 otherwise. Notably, all commercial banks in Cambodia implemented IFRS 9 at the same time, precluding a treated–control comparison that could utilize identification strategies such as a difference-in-differences design. Thus, since the only choice is to determine whether there was a regulatory change using the data that already exists, the post-adoption dummy variable is actually the most appropriate method for making such an identification. Bank size was represented by the natural logarithm of total assets. Bank-level variables such as the return on assets ratio (ROA), non-performing loans (NPLs), leverage (LEV), size (SIZE), liquidity (LIQ) and cash (CASH) holdings ratios were obtained from the National Bank of Cambodia in Cambodia. Furthermore, real GDP growth (GDP) and inflation (INF) were obtained from the Asian Development Bank. All variable definitions, measurement details and data sources are reported in Table 1.

Table 1. Variable measurements.

Variable	Measurement	Data Source
ROA	Net Profit/Total Assets	National Bank of Cambodia
IFRS9	Dummy Variable: 1 for 2019–2024, 0 Otherwise	National Bank of Cambodia
NPL	Non-Performing Loan/Total Gross Loans	National Bank of Cambodia
LEV	Total Liabilities/Total Assets	National Bank of Cambodia
SIZE	Natural Logarithm of Total Assets	National Bank of Cambodia
LIQ	Liquid Assets/Total Assets	National Bank of Cambodia
CASH	Cash/Total Assets	National Bank of Cambodia
GDP	Real GDP Growth Rate	Asian Development Bank
INF	Inflation Rate	Asian Development Bank

4. Empirical Results

Table 2 provides detailed descriptive statistics for all variables used in the analysis, based on 312 bank-year observations. Cambodian commercial banks were, on average, profitable, with an ROA mean value of 1.112 during the sample period. However, the standard deviation of 2.691, as well as the range of −32.462 to 9.105, suggest some considerable heterogeneity in bank performance. This huge scatter indicates a significant difference in profitability conditions across banks and through time.

The variable for IFRS 9 adoption has a mean of 0.500 and a standard deviation of 0.501 since it is an indicator variable denoting the pre- and post-adoption phases in even distribution. This moderated relation is appropriate for examining the impact of the association between IFRS 9 implementation and bank profitability.

At the bank-level, NPLs show a mean of 6.157 and a very high standard deviation of 13.73, with a maximum value of 97.503, suggesting large variation in asset quality among banks. The average LEV is 0.704, which suggests that banks fund much of their assets with

liabilities, but as the observed range shows, there is substantial variation in the capital structure. SIZE has a significant dispersion as well, between 2.171 and 9.539, reaffirming that the sample consists of both relatively small and large banks. The liquidity indicator LIQ has an average of 0.355, whereas CASH has an average of 0.043. These two variables are highly variable, suggesting that Cambodian banks adopt different liquidity and cash-holding strategies. This heterogeneity could reflect differences in business models, risk appetites or funding conditions.

Table 2. Descriptive statistics.

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
ROA	312	1.112	2.691	−32.462	9.105
IFRS9	312	0.500	0.501	0	1
NPL	312	6.157	13.73	0.000	97.503
LEV	312	0.704	0.253	0.006	0.908
SIZE	312	6.152	1.580	2.171	9.539
LIQ	312	0.355	0.138	0.076	0.896
CASH	312	0.043	0.065	0.0001	0.436
GDP	312	5.538	2.879	−3.096	7.498
INF	312	2.707	1.075	0.800	5.064

Considering the macroeconomic environment, GDP growth averages 5.538 and is clearly growing strongly as an economy, while the negative minimum value shows that this sample also contains times of economic contraction. Inflation has a mean of 2.707 and is quite stable as a whole, but with some slight variation. The relevance of these two macroeconomic patterns in relation to bank profitability provides the basis for their use as control variables.

The summarized pairwise correlations between the explanatory variables used in this analysis are presented in Table 3. Overall, the coefficients are generally low to moderate in magnitude, indicating that severe multicollinearity is unlikely. This serves as a preliminary validation of the selection of the variables used in our panel regression models.

Table 3. Matrix of correlations.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) IFRS9	1.000							
(2) NPL	0.120	1.000						
(3) LEV	0.063	−0.442	1.000					
(4) SIZE	0.275	−0.471	0.795	1.000				
(5) LIQ	−0.155	−0.289	−0.001	0.098	1.000			
(6) CASH	−0.017	0.013	−0.061	−0.055	0.374	1.000		
(7) GDP	−0.571	−0.032	−0.044	−0.147	0.028	−0.014	1.000	
(8) INF	−0.028	−0.028	0.002	−0.028	0.000	0.026	−0.122	1.000

Regarding the correlations between IFRS9 and the continuous variables, we found a positive correlation with NPL (0.120), LEV (0.063) and SIZE (0.275) and a negative correlation with LIQ (−0.155), CASH (−0.017), GDP (−0.571) and INF (−0.028). The strongest correlation with IFRS9 is the negative relationship with GDP, which suggests that the adoption period coincides with a relatively weaker macroeconomic environment in the sample.

Of the control variables, NPLs are negatively related to LEV (−0.442), SIZE (−0.471), and LIQ (−0.289), which suggests that a higher quantity of poor loans tends to go together with lower leverage, smaller banking size, and less liquidity. The correlation between

LEV and SIZE is very high (0.795), suggesting that bigger banks are more levered. This coefficient, although on the high side, is still below what many consider to be serious multicollinearity thresholds. LIQ is positively correlated with CASH (0.374), implying that more liquid banks tend to hold higher cash reserves.

The correlations between the bank-specific variables and the macroeconomic variables are mostly weak. A weak correlation was found between all variables other than GDP and NPLs, LEV, SIZE, LIQ and CASH. INF shows negligible correlations with almost all variables. GDP has a weak negative correlation with INF (−0.122), which indicates that there few overlaps between these two macroeconomic controls. The overall correlation results show that the explanatory variables are sufficiently uncorrelated to be included together in a regression analysis. As a result, collinearity is not detected with the matrix.

Table 4 summarizes the results of specification tests to distinguish variation measures and within estimators appropriate for static panel data. The Chow test for the significance of comparing FE and POLS returns a Chi-square of 58.89 with a *p*-value of 0.0000, rejecting the null hypothesis that pooled homogeneity holds. This result is consistent with the existence of important bank-specific effects and the fact that the fixed effects model outperforms the POLS model. In addition, the Breusch and Pagan LM test comparing RE and POLS reports a Chi-square value of 0.10 with a *p*-value of 0.3767. This result fails to reject the null hypothesis that the variance of the random effects is zero, implying that the random effects model does not outperform POLS. More interestingly, the Hausman test between FE and RE gives a Chi-square of 12.51 with a *p*-value of 0.1298, indicating that the null hypothesis cannot be rejected, which suggests that the gap between FE and RE estimators is not systematic. Nevertheless, since the random effects specification is rejected by the LM test, and the fixed effects model largely outperforms POLS according to the Chow test, the static panel analysis justified the FE model as an appropriate estimator. These results, taken together, indicate that unobserved bank-specific heterogeneity matters for profitability and should be better captured by the fixed effects specification than the random effects one.

Table 4. Model selection tests.

Model	Test	Statistical Value	*p*-Value
FE vs. POLS	Chow test	Chi-square = 58.89	0.0000
RE vs. POLS	Breusch and Pagan Lagrangian Multiplier test	Chi-square = 0.10	0.3767
FE vs. RE	Hausman test	Chi-square = 12.51	0.1298

Table 5 summarizes the estimates from three static panel specifications: pooled ordinary least squares, random effects, fixed effects, and year fixed effects. The empirical findings in Table 5 demonstrate a stable and disadvantageous link between adoption of IFRS 9 and bank profitability measured via return on assets. In all four model specifications, the coefficient of IFRS 9 is negative, ranging from −0.944 in the fixed effects model to −5.117 in the year fixed effects specification. The models themselves show a highly variable strength of statistical significance, except the year fixed effect, which suggests statistical insignificance. The findings imply that the effective period of the post-IFRS 9-adoption mechanism coincides with reduced performance of Cambodian commercial banks, after accounting for both bank factors and macroeconomic elements. The pattern is substantively consistent with the expectation that the provisioning level has increased pressure and reduced reported earnings in order to comply with the provisions of the new IFRS 9 expected credit loss framework, although further analysis is needed to disentangle the direct effect of IFRS 9 alone against other contemporaneous factors.

This result is economically plausible. IFRS 9 replaced the incurred loss approach with the expected credit loss approach, which required faster impairment recognition

and made it more likely that deteriorating credit quality reflects earnings sooner. This forward-looking provisioning can, in a banking system exposed to credit quality variation and cyclical shocks, squeeze contemporaneous accounting profitability even though it may enhance transparency and prudential discipline on a longer-run basis. Thus, the current evidence indicates that IFRS 9 did not lead to earnings optimization but rather resulted in earnings limitation, considering its prior accounting impact within Cambodia.

This direction of results is consistent with recent empirical evidence from Jordan, which showed that after the implementation of IFRS 9, loan loss provisions increased, while both ROA and ROE decreased (Morshed, 2024). This is not to claim that the result should be generalized across all institutional settings. Evidence from credit institutions in Romania shows substantial heterogeneity in the performance implications of IFRS 9, driven first by asset classification and then by valuations through different channels, given that success in some fair value classifications is stronger than in others (Grosu et al., 2025). In that sense, the Cambodian evidence adds to the small literature showing that IFRS 9 is not necessarily a neutral accounting reform; its profitability effects are conditional on banks' portfolio structures, provisioning intensity and the local macro-financial environment.

Among the bank-specific control variables, non-performing loans are one of the strongest predictors of profitability. The coefficient is negative in all models and significantly different from zero at the significant level of 0.001 for RE and 0.05 for FE. Under IFRS 9, impaired loan portfolios consequently grow as credit impairment is captured quickly through provisioning. This finding aligns with more recent evidence within the context of Bangladesh and other banking sectors, suggesting that increased NPL ratios significantly affect the profitability operations of banks, deteriorate income generation capacity, and drive credit costs higher (B. Abebe & Ali, 2025; Zabin, 2024). It also reinforces more general, recent evidence that deteriorating asset quality has remained one of the main underlying transmission channels of banking fragility on earnings performance (Laporšek et al., 2025).

Leverage has a negative correlation with profitability. In the POLS and RE models, the leverage coefficient is strongly negative and significant, while in the FE model, it becomes insignificant. The negative coefficient estimation indicates that banks with higher leverage are expected to have lower ROA. This pattern suggests that, more broadly, relying on debt funding could reinforce fragility, increase balance sheet rigidity and raise the earnings sensitivity of banks to asset quality shocks. Specifically, the outcome is consistent with contemporary findings from Ethiopia, which indicate that leverage similarly depressed bank profitability (B. Abebe & Ali, 2025). On the contrary, it is inconsistent with some country-specific results, where leverage was found to play a positive role in profitability under different banking structures and monetary conditions, as has been reported for Iraqi banks (Ghafel & Bougatef, 2024). This divergence strengthens the main corollary of the comparative literature that the leverage profitability channel is extremely context-dependent and seems acutely adverse when provisioning pressure and credit risk are high.

Bank size is positively signed in all models, but it maintains significance in only the POLS and RE specifications. This finding is consistent with recent evidence from Ethiopia, where bank size shows a positive and significant influence on profitability, as well as the established literature, which suggests that scale can improve financial performance by enhancing operational efficiency and revenue diversification (B. Abebe & Ali, 2025; Ghafel & Bougatef, 2024). Nevertheless, the broader literature also leads to a caveat: evidence from European banks has shown that a large size can become pernicious when accompanied by managerial inefficiency or complexity (Laporšek et al., 2025). The Cambodian result thus indicates that size remains on the beneficial side of the threshold in this sample.

Across all specifications, the coefficients on liquidity have negative signs yet are never significant at conventional levels. In other words, once other bank-specific and macroeconomic factors are accounted for, the stock of liquid assets in Cambodian commercial banks does not lead to an average profitability effect. A possible interpretation is that liquidity serves a defensive rather than an income-producing function, which could help buffer the balance sheet, for instance, without directly raising ROA. This poor performance stands in stark contrast with some earlier findings from Ethiopia, where liquidity was found to support profitability, but it is more aligned with studies in which liquidity effects become sluggish after controlling for bank heterogeneity and dynamic adjustment (B. Abebe & Ali, 2025; Ghosh, 2024). The Cambodian evidence thus suggests that liquidity buffers may be more important for stability and balance sheet composition than they are for short-run returns in accounting terms.

The coefficient of the cash variable is insignificant in all the static models. Stronger cash positions in a banking system vulnerable to regulatory adjustment and cyclical unpredictability could alleviate funding pressures, enable greater operational flexibility, and allow banks to absorb impairment shocks without backlash. Finally, there are macroeconomic controls that add another interpretation layer to the whole issue. For the static models, growth in GDP and inflation do not survive formal significance testing. The robustness of the GDP–profitability nexus in cross-country data is still mixed; several previous findings show positive effects, while some indicate weak or insignificant relations among them depending on the sample periods and model structures (B. Abebe & Ali, 2025; Almeida & Sousa, 2025; Laporšek et al., 2025). The current finding thus complements the stream of literature, which implies that growth will not necessarily lead to increased bank profitability due to tighter recognition of credit risk.

Table 5. Static panel empirical results.

	Model 1	**Model 2**	**Model 3**	**Model 4**
	POLS	RE	FE	FE + Year
Variable	ROA	ROA	ROA	ROA
IFRS9	−0.953 **	−0.959 **	−0.944 *	−5.117
	(0.460)	(0.385)	(0.482)	(5.238)
NPL	−0.0522	−0.0509 ***	−0.0363 **	−0.025
	(0.0421)	(0.0128)	(0.0168)	(0.023)
LEV	−4.456 ***	−4.358 ***	−1.491	−4.922
	(1.719)	(1.004)	(1.820)	(3.218)
SIZE	0.790 ***	0.785 ***	0.530	1.806
	(0.225)	(0.175)	(0.403)	(1.341)
LIQ	−0.220	−0.256	−1.873	−2.103
	(1.499)	(1.227)	(1.867)	(2.883)
CASH	0.720	0.832	6.071	6.238
	(2.356)	(2.452)	(5.127)	(6.356)
GDP	−0.0165	−0.0168	−0.0194	−0.915
	(0.0501)	(0.0604)	(0.0602)	(1.695)
INF	−0.102	−0.102	−0.118	−0.302
	(0.223)	(0.132)	(0.132)	(0.437)
Constant	0.608	0.570	0.432	3.611
	(1.618)	(1.039)	(2.178)	(8.718)
F/Wald test	F(8, 303) = 18.97	Wald Chi-square = 58.89	F(8, 278) = 1.79	F(16, 25) = 36.52
p-value	0.0000	0.0000	0.0779	0.0000
R-square	0.2717	0.6874	0.3690	0.3904
Include	-	-	-	Year
N	312	312	312	260

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

Overall, the empirical narrative that emerges from Table 5 is both clear and consequential. Even after controlling for credit quality, leverage, size, the liquidity-to-total-assets ratio, cash buffers and macroeconomic conditions, the present profits of Cambodian commercial banks may still have been diminished following IFRS 9 adoption. Weaker asset quality and higher leverage appear to cause greater deterioration in profitability, while larger banks with stronger cash positions are better positioned for the post-adoption environment. The findings frame IFRS 9 not just as a technical reform confined to reporting but also as an important institutional change with genuine earnings ramifications. The standard seems to have been gauged in Cambodia with the ability to recognize credit risk more acutely, whilst profitability was still exposed to internal balance sheet shortfalls and a negative macroeconomic environment. This very conclusion effectively anchors the research within the current literature, indicating that the firm effects of IFRS 9 are immediate, heterogeneous, and fundamentally linked to how banking systems are organized or the healthiness of bank balance sheets.

The dynamic panel empirical results are presented in Table 6. Model 5 provides dynamic fixed effects estimates, whereas Model 6 is based on a dynamic panel estimator. L1.ROA is the coefficient of lagged profitability; it is not significant in Model 5 but is negative and statistically significant in Model 6 ($\beta = -0.180$, $p < 0.01$). This result implies short-run mean reversion, not profitability persistence. In particular, a one-unit increase in the ROA of the previous period reduces the current ROA by 0.180 units, keeping the other variables unchanged.

In both the dynamic fixed effects and dynamic panel specifications, the coefficient on the IFRS 9 indicator is negative. The dynamic fixed effects estimate is -0.999 and not statistically different from zero at conventional significance levels; the dynamic panel estimate in Model 6 is -0.811, which suggests that when the indicator changes from zero to one, the current ROA decreases by 0.811 percentage points after holding the previous-period ROA and control variables constant, as well as bank-specific effects. The long-run relationship is given by $-0.811/(1-\rho)$, where ρ is the coefficient on lagged ROA, subject to $|\rho| < 1$. However, the consistency across the two estimators in the negative direction is not robust to specification, and although a difference in significance does imply that the two coefficient estimates are statistically different, it does not by itself demonstrate that.

The negative relationship between IFRS 9 and ROA supports the hypothesis that, as anticipated, banks experienced lower profitability in the short run through an early recognition of their expected credit losses, which contributed to greater amounts of impairment charges. This finding provides context for supporting Gómez-Ortega et al. (2022), who investigate the early implementation of IFRS 9 by listed Spanish credit institutions, taking into account that although it leads to sizeable negative results, it also has a positive impact on bank financial outcomes. The study also found that post-implementation complexity increased and accounting estimates became more involved. The result is also in line with Norouzpour et al. (2025), who focused on the European context yet only with regard to earnings management and capital management behavior among European banks after IFRS 9 adoption. The rise in earnings management can be attributed to countries with relatively weaker regulatory quality. The evidence in these studies associates the negative profitability effect with not only an immediate recognition of losses but also one that requires far greater managerial judgement for estimation. Nevertheless, the outcome differs with respect to Abuaddous (2025), who studied 53 Gulf banks and found less evidence that IFRS 9 leads to a significant increase in loan loss provisions, impairment losses and non-performing loans. The evidence is contrasting, suggesting that the economic impact of IFRS 9 may depend on identifying institutional quality, regulation enforcement, banking structure and the ability of some banks to absorb transitional impairment impacts.

Asset quality is still a key determinant for profitability. The coefficient of NPLs is negative and significant over all subsample windows. In the fixed effects model, each additional unit of NPLs causes a change of 0.047 in the dependent variable, ROA, compared to 0.0527 in the dynamic panel model specification. In Model 6, leverage also decreases profitability ($\beta = -2.991$, $p < 0.01$), which may reflect the funding and risk costs of higher debt levels. On the other hand, bank size has a positive influence ($\beta = 0.438$ $p < 0.05$), which is expected due to scale-related benefits. CASH is significantly positive ($\beta = 11.13$, $p < 0.01$), although the economic size varies based on how this variable is scaled. LIQ remains statistically insignificant. Model 6 shows that higher GDP growth and inflation are associated with lower ROA.

The Hansen test ($p = 0.152$) cannot reject the validity of the instruments, and the insignificant AR(2) test ($p = 0.709$), indicates that there is no second-order serial correlation. However, the small AR(1) coefficient ($p = 0.267$) is unusual for first-differenced GMM residuals and robustness tests relating to instrument count; therefore, lag depth and model specification are necessary. The results are dissimilar to those of Abuaddous (2025), who found no statistically significant increases in loan provisions, impairment losses and NPLs following the implementation of IFRS 9 by 53 Gulf banks. The large significant coefficient of ROA provides strong evidence for the profitability effect of IFRS 9 because this indicator relates to other reported credit risk indicators only moderately, especially in terms of time.

Table 6. Dynamic panel empirical results.

	Model 5	**Model 6**
Variable	Dynamic-FE ROA	Dynamic ROA
L1.ROA	−0.099	−0.180 ***
	(0.116)	(0.00989)
IFRS9	−0.999	−0.811 ***
	(1.228)	(0.217)
NPL	−0.047 ***	−0.0527 ***
	(0.015)	(0.00223)
LEV	−4.571	−2.991 ***
	(2.783)	(0.510)
SIZE	0.857	0.438 **
	(1.03)	(0.219)
LIQ	−0.761	−0.487
	(2.922)	(0.552)
CASH	10.365	11.13 ***
	(7.028)	(0.786)
GDP	−0.027	−0.0210 ***
	(0.067)	(0.00490)
INF	−0.122	−0.136 ***
	(0.12)	(0.0175)
Constant	−0.122	1.610
	(0.12)	(1.145)
F/Wald test	F(9, 25) = 12.94	Wald Chi-square = 4275.19
p-value	0.0000	0.0000
R-square	0.3223	
Hansen test		Chi-square = 13.23 Prob > Chi-square = 0.152
AR(1)		z-value = −1.1092 Prob > z = 0.2673
AR(2)		z-value = 0.37342 Prob > z = 0.7088
N	286	260

Standard errors in parentheses; ** $p < 0.05$ and *** $p < 0.01$.

5. Conclusions and Policy Implications

5.1. Conclusions

This study investigates the impact of IFRS 9 adoption on Cambodian commercial banks' profitability, using ROA as a measure of profitability. This analysis was motivated by two considerations. First, the opportunity to extend the literature on IFRS 9 beyond well-studied jurisdictions. Second, the opportunity to determine whether a banking profitability measure that is central in effectively all assessments of bank performance is associated with major accounting reform in an emerging economy. The Cambodian banking context offers a particularly relevant environment in which accounting change, prudential regulation and credit expansion are interconnected. Set against this backdrop, the results clearly show that IFRS 9 is linked to a major drop in banks' profitability. This result is highly robust to static panel estimators and only somewhat less strongly supported in the dynamic specification, which should be the basis for inference.

The findings of the study also indicate an immediate profitability cost imposed on Cambodian commercial banks by the switch from the incurred loss model to the expected credit loss framework. Earlier recognition of credit impairment with greater provisioning requirements appears to have compressed reported earnings, resulting in lower ROA post-adoption. Thus far, the evidence suggests that IFRS 9 should not be seen only as a technical reporting change. It is in fact a substantive structural change to banking with immediate implications for how banks earn money, manage their balance sheet and recognize losses. The results thus strengthen the belief that accounting standards can have a significant impact on financial sector outcomes, particularly in banking systems where loan quality, leverage and macroeconomic volatility are tightly intertwined.

The broader empirical pattern provides more context on the channels in which profitability is molded in a post-IFRS 9 environment. Based on the results, the measurable effects of non-performing loans and leverage show that both have a persistently adverse effect on ROA, meaning that asset quality matters and that greater balance sheet reliance on debt increases earnings stress. In contrast, a positive contribution of bank size and cash holdings suggests that larger institutions, as well as banks with more powerful liquidity buffers and, therefore, greater ability to absorb regulatory adjustment costs and provisioning shocks, are also better prepared. Liquidity, while negative, is not statistically significant, suggesting that holdings of liquid assets function more as a precautionary buffer than an insulator of immediate earnings. At the macro level, this cost–revenue dynamic model indicates that GDP growth and inflation increase expected credit losses, thus reducing profits. This points out that growth episodes do not always lead to better bank performance when non-performing loans manifest as expanding credit, which is usually accompanied by higher ECL recognition, and when inflation forces operating costs and credit costs upward.

Another contribution of the study is the dynamic evidence on profit behavior. A negative and large lagged ROA term indicates mean reversion (i.e., high profits are not persistent). This finding underscores the need for dynamic modeling of profitability in banking research, especially when regulatory transition, endogeneity, and cyclical adjustment are presumed to impact earnings pathways. The dynamic specification is also backed up by the diagnostic tests, which help build confidence in the central conclusion that, indeed, adoption of IFRS 9 has a measurable negative impact on bank profitability in Cambodia.

The study makes two main contributions. First, it contributes country-specific data from Cambodia to the developing international database on IFRS 9, which, to date, remains concentrated in a small number of jurisdictions. Second, it shows that the effects of accounting reform are not limited to disclosure quality and provisioning behavior but also determine a fundamental metric of economic performance. Thus, the evidence contributes

new insights into how financial reporting reform relates to bank-level characteristics and prevailing macroeconomic conditions in an emerging market banking system.

This study has several limitations. First, profitability is reflected principally by ROA; thus, the results and their impact are likely to be limited to other dimensions of bank performance, e.g., ROE, net interest margin (NIM), market value or risk-adjusted profitability. Second, the study only examines Cambodian commercial banks; thus, the findings may not be immediately generalizable to other developing countries with regulatory, institutional and banking structure variations. Third, despite the improvements made to the dynamic model that account for persistence and endogeneity, the study cannot fully control for bank-specific but unobservable characteristics or broader macroeconomic shocks around the IFRS 9 implementation period. The analysis depicts the short to medium-term consequences of IFRS 9, and its effects on profitability in the long term should be explored. IFRS 9 adoption may reduce Cambodian commercial banks' ROA because its expected credit loss model requires earlier and larger loan loss provisions. Higher provisioning, compliance costs, and more conservative asset valuation reduce reported net income relative to total assets, particularly during periods of elevated credit risk.

One major identification limitation of this study is that while the empirical models control for relevant bank-level and macroeconomic factors, the research design does not isolate IFRS 9 adoption from other regulatory, economic and institutional changes that occurred in this period. IFRS 9 was extensively introduced across the banking system, making it tough to identify a matched unaffected comparison group; therefore, unobserved contemporaneous elements and driven observer adjustments might additionally shape financial institution profitability. As a result, the estimates should be viewed as an indication of a relationship between the post-IFRS 9 period and bank profitability, not causation. Future studies might reinforce causal identification by using different research designs, such as cross-country comparisons, staggered implementation contexts with natural or potential control groups, and/or quasi-experimental approaches.

5.2. Policy Implications

These results are important for regulators, bank management, investors and standard-setting bodies alike. The implications for regulators indicate that IFRS 9 may decrease reported profits in the short run even while delivering more transparency and encouraging more prudent recognition of credit risk. Hence, prudential authorities in Cambodia should exercise caution when interpreting post-adoption profitability drops. A decline in ROA post-IFRS 9 implementation is therefore not only indicative of operational deterioration but also of a more timely and robust recognition of losses. Supervisory assessment should therefore also separate accounting-driven compression of earnings from a more fundamental deterioration in a bank's underlying financial condition.

The results were also found to be more pronounced in banks with below-average asset quality for profitability effects of IFRS 9. This implied a need for more intensive supervisory focus on the governance of credit risk, loan monitoring and provisioning practices. Regulatory policy can reinforce current expectations for forward-looking credit assessment, early warning systems and portfolio stress testing in a way that enables expected credit losses to be identified with greater precision and with gentler impacts on earnings. In practical terms, a better alignment among IFRS 9 implementation, loan classification rules and prudential capital planning may be needed for supervisory frameworks.

For bank management, the findings imply that a successful adjustment to IFRS 9 needs more than only technical compliance. The detrimental effects tied to NPLs and leverage demonstrate that profitability in a regime based on expected credit losses is highly contingent on the condition of the balance sheet. This means banks should refocus their

efforts on much stronger underwriting standards, a more disciplined borrower assessment process, greater problem loan resolution steps, and tighter leverage control. This positive impact of cash holdings is further underpinned by banks that are apparently able to withstand provisioning pressure better with higher liquidity buffers. Profit management and risk management cannot be separate disciplines anymore; they are intimately linked to each other under IFRS 9.

Other structural implications of the positive link between bank size and profitability were found. These economies of scale, wider diversification and more robust risk management infrastructure seem to have made larger banks better suited to absorb the compliance costs and earnings impact provoked by IFRS 9. This indicates that smaller banks, which may bear greater implementation burdens, need different regulatory and institutional support. This could be done via capacity-building initiatives, technical guidance, and greater proportionality in supervisory expectations across institutions of different sizes.

The relevance of macroeconomic variables to the dynamic model implies that accounting reform cannot be implemented or assessed in a vacuum. Given that GDP growth and inflation simultaneously have adverse effects on profitability in the dynamic setting, macroprudential authorities should integrate accounting transition effects into broader financial stability surveillance. Forward-looking provisioning creates a profit effect that could be more pronounced during times of fast credit growth, high inflation or economic turbulence. It implies specific incorporation of IFRS 9-related impairment dynamics within regulatory stress testing exercises under alternative macroeconomic scenarios.

The implications of the results for investors and other market participants are that post-IFRS 9 earnings need to be interpreted in a more nuanced manner. Lower profitability may, in fact, partly represent improved transparency and a more timely recognition of expected losses than just a reduction in franchise value. Therefore, financial analysis of Cambodian banks should focus more on asset quality, provisioning adequacy, capital level and liquidity buffers rather than short-term profitability indicators.

This policy implication does not reduce the strength of IFRS 9; rather, it supports its effective implementation. A focus on practices to improve the quality of credit risk data, strengthen expected credit loss modeling capacity and improve internal governance over provisioning judgments should be pursued by both regulators and banks. Supervisory authorities might also offer clearer guidance and coordination for applicable supervision to maintain uniformity across banks. In the short run, IFRS 9 might provide lower reported profitability; these actions allow banks to accommodate the transition while safeguarding the advantages of the standard, namely, earlier recognition of losses, increased transparency and market discipline and a more resilient financial sector.

Overall, the findings from Cambodia imply that IFRS 9 has real earnings implications, and these are dependent on both external economic forces and bank-level financial weaknesses. Thus, productive policy should meld accounting conformity, more intense credit risk scrutiny and differentiated institutional support with macroprudential vigilance. Such an approach would enhance the ability of Cambodian commercial banks to absorb the short-run costs of reform while capturing the longer-run benefits of financial reporting, which is more forward-looking and informative.

Author Contributions: Conceptualization, K.H., B.H. and S.L.; methodology, K.H., B.H. and S.L.; software, K.H., B.H. and S.L.; validation, K.H., B.H. and S.L.; formal analysis, K.H., B.H. and S.L.; investigation, K.H., B.H. and S.L.; resources, K.H., B.H. and S.L.; data curation, K.H., B.H. and S.L.; writing—original draft, K.H., B.H. and S.L.; writing—review and editing, K.H., B.H. and S.L.; visualization, K.H., B.H. and S.L.; supervision, K.H., B.H. and S.L.; project administration, K.H., B.H. and S.L.; funding acquisition, K.H., B.H. and S.L. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by CamEd Business School, grant number CamEd-2026, and the APC was funded by CamEd Business School.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The dataset is available on request from the authors.

Conflicts of Interest: The authors declare no conflicts of interest.

References

Abdullah, H., & Tursoy, T. (2021). Capital structure and firm performance: Evidence of Germany under IFRS adoption. *Review of Managerial Science*, *15*(2), 379–398. [CrossRef]

Abebe, A. A. (2022). The effect of IFRS on the financial ratios: Evidence from banking sector in the emerging economy. *Cogent Economics & Finance*, *10*(1), 2113495. [CrossRef]

Abebe, B., & Ali, A. (2025). Determinants of commercial banks' profitability in the emerging economy: Evidence from Ethiopia. *Sage Open*, *15*(4), 21582440251369241. [CrossRef]

Abuaddous, M. (2025). The implementation of IFRS9 in Gulf banks: Using the GMM and the difference-in-differences with multiple time periods approaches. *Journal of Islamic Accounting and Business Research*, *16*(1), 125–146. [CrossRef]

Akther, T., Rahman, M., & Rahman, M. M. (2023). Factors influencing commercial bank profitability in Bangladesh: A panel data approach. *Future Business Journal*, *9*(1), 66. [CrossRef]

Al-Eitan, G. N., Al-Own, B., & Bani-Khalid, T. (2022). Financial inclusion indicators affect profitability of Jordanian commercial banks: Panel data analysis. *Economies*, *10*(2), 38. [CrossRef]

Al-Hanandeh, A., Othman, A., & Mastor, N. H. (2026). The mediating effect of capital adequacy on the relationship between the ECL model and commercial banks profitability in the Middle East. *International Journal of Finance & Economics*, *31*, 4016–4033. [CrossRef]

Al-Harbi, A. (2019). The determinants of conventional banks profitability in developing and underdeveloped OIC countries. *Journal of Economics, Finance and Administrative Science*, *24*(47), 4–28. [CrossRef]

Almaqtari, F. A., Al-Homaidi, E. A., Tabash, M. I., & Farhan, N. H. (2019). The determinants of profitability of Indian commercial banks: A panel data approach. *International Journal of Finance & Economics*, *24*(1), 168–185.

Almeida, L., & Sousa, F. (2025). Determinants of bank profitability in Portugal: Insights from a period of sectoral transformation. *Quantitative Finance and Economics*, *9*(2), 425–448. [CrossRef]

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, *58*(2), 277–297. [CrossRef]

Bagh, T., Razzaq, S., Azad, T., Liaqat, I., & Khan, M. A. (2017). The causative impact of liquidity management on profitability of banks in Pakistan: An empirical investigation. *International Journal of Academic Research in Economics and Management Sciences*, *6*(3), 153–170. [CrossRef] [PubMed]

Baltagi, B. H. (2021). *Econometric analysis of panel data* (6th ed.). Springer.

Ben Ltaief, K., & Moalla, H. (2026). The impact of financial assets' classification according to IFRS 9 on firm value: The case of MENA region's banks. *Journal of Financial Reporting and Accounting*, *24*(1), 66–96.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143. [CrossRef]

Collaku, B., Ahmeti, S., & Aliu, M. (2021). IFRS 9 transition effect on financial stability of Kosovo commercial banks. *Prizren Social Science Journal*, *5*(1), 1–10. [CrossRef]

Demirgüç-Kunt, A., & Huizinga, H. (1999). Determinants of commercial bank interest margins and profitability: Some international evidence. *The World Bank Economic Review*, *13*(2), 379–408. [CrossRef]

Ebenezer, O. O., Omar, W. A. W., & Kamil, S. (2017). Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Nigeria. *Journal of Finance & Banking Studies*, *6*(1), 25–38. [CrossRef]

Fontes, J. C., Panaretou, A., & Shakespeare, C. (2025). The effect of IFRS 9 on comparability. *Accounting and Business Research*. Advanced online publication. [CrossRef]

Ghafel, O. A., & Bougatef, K. (2024). The impact of inflation on bank profitability: Empirical evidence from Iraq. *Pakistan Journal of Life & Social Sciences*, *22*(2), 1599–1607. [CrossRef]

Ghosh, S. (2024). IFRS-9, expected loan loss provisioning and bank liquidity creation: Early evidence. *Accounting Research Journal*, *37*(4), 436–452. [CrossRef]

Gómez-Ortega, A., Gelashvili, V., Delgado Jalón, M. L., & Rivero Menéndez, J. Á. (2022). Impact of the application of IFRS 9 on listed Spanish credit institutions: Implications from the regulatory, supervisory and auditing point of view. *The Journal of Risk Finance*, *23*(4), 437–455. [CrossRef]

Grosu, V., Ionescu-Feleagă, L., Macovei, A.-G., Ciubotariu, M.-S., Hlaciuc, E., Socoliuc, M., & Petrescu, C. (2025). The impact of IFRS 9 adoption on the financial performance and sustainability of Romanian credit institutions. *Eastern European Economics*, *63*(6), 993–1014. [CrossRef]

Isayas, Y. N. (2022). Determinants of banks' profitability: Empirical evidence from banks in Ethiopia. *Cogent Economics & Finance*, *10*(1), 2031433. [CrossRef]

Islam, S., & Rana, M. S. (2019). Determinants of bank profitability: Evidence from commercial banks of Bangladesh. *Journal of Asian Business Strategy*, *9*(2), 174. [CrossRef]

Jasman, J., Prihandini, W., Mawardi, R., Kurniawati, D., Ridarmelli, R., Haron, R., & Tahir, H. H. M. (2026). IFRS 9 adoption and the value relevance of accounting information: Evidence from the banking sector. *Accounting and Financial Control*, *7*(1), 11. [CrossRef] [PubMed]

Jílková, P., & Kotěšovcová, J. (2022). Profitability management: How can macro and microeconomic determinants influence commercial bank profitability in the EU-27? *TEM Journal*, *11*(3), 1300. [CrossRef]

Karanu, G. M. (2019). *The effect of implementation of IFRS 9 on the financial performance of listed commercial banks in Kenya* [Ph.D. thesis, Strathmore University].

Koroleva, E., Jigeer, S., Miao, A., & Skhvediani, A. (2021). Determinants affecting profitability of state-owned commercial banks: Case study of China. *Risks*, *9*(8), 150. [CrossRef]

Laporšek, S., Švagan, B., Stubelj, M., & Stubelj, I. (2025). Profitability drivers in European banks: Analyzing internal and external factors in the post-2009 financial landscape. *Risks*, *13*(1), 2. [CrossRef]

Ma, C., Awan, R. U., Ren, D., Alharthi, M., Haider, J., & Kouser, R. (2022). The IFRS adoption, accounting quality, and banking performance: An evaluation of susceptibilities and financial stability in developing economies. *PLoS ONE*, *17*(7), e0265688. [CrossRef] [PubMed]

Morshed, A. (2024). Evaluating the effects of IFRS 9 on Jordanian banks' credit and financial metrics. *Banks and Bank Systems*, *19*(4), 70–83. [CrossRef]

Neamah, M. F. (2024). The impact of IFRS 9 compliance on financial statement outputs: An exploratory study of a sample of commercial banks. *Journal of Economics, Finance and Accounting Studies*, *6*(1), 54–66. [CrossRef]

Nickell, S. (1981). Biases in dynamic models with fixed effects. *Econometrica*, *49*(6), 1417–1426. [CrossRef]

Nnadi, M., Keskudee, A., & Amaewhule, W. (2023). IFRS 9 and earnings management: The case of European commercial banks. *International Journal of Accounting & Information Management*, *31*(3), 504–527. [CrossRef]

Norouzpour, M., Nikulin, E., & Downing, J. (2025). IFRS 9, earnings management and capital management by European banks. *Journal of Financial Reporting and Accounting*, *23*(5), 1990–2006. [CrossRef]

Ongalo, S., & Wanjare, J. (2022). International financial reporting standard (IFRS) 9 and the financial performance of commercial banks in Kenya. *European Journal of Business and Management Research*, *7*(6), 221–226. [CrossRef]

Onofrei, M., Bostan, I., Roma, A., & Firtescu, B. N. (2018). The determinants of commercial bank profitability in CEE countries. *Romanian Statistical Review*, *(2)*, 33–46.

Ricapito, F. P. (2024). The impact of IFRS 9 on credit risk and profitability in the European banking sector. *Corporate Ownership & Control*, *21*(4), 41–48. [CrossRef]

Rumaly, N. (2023). Unlocking profitability: Exploring the impact of bank-specific and macroeconomic determinants on return on equity in commercial banking sector of Bangladesh. *International Journal of Economics and Financial Issues*, *13*(6), 107–115. [CrossRef]

Serwadda, I. (2018). Determinants of commercial banks' profitability. Evidence from Hungary. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, *66*(5), 1325–1335. [CrossRef]

Utami, E. R., Sumiyana, S., Barokah, Z., & Mustakini, J. H. (2025). IFRS 9 implementation indicating asset opacities: Even though predicting earnings' forecasts and value relevance in Asia-Pacific countries. *Journal of Financial Reporting and Accounting*, *23*(3), 1089–1113. [CrossRef]

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). MIT Press.

Yu, J., Hassan, M. S., Abdullah, M. B., Nor, M., & Binti, H. (2024). The effects of IFRS 9: A systematic literature review. *Global Business & Management Research*, *16*, 2064–2079.

Zabin, S. (2024). Impact of non-performing loans on bank profitability: A study of Rupali Bank PLC, Bangladesh. *Journal of Economics and Public Finance*, *42*(1), 159–174. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.