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# Empirical Impact of IFRS 9 on Banking Performance and Credit Risk Management of Moroccan Banks: A Panel Data Analysis (2014–2025)

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# Empirical Impact of IFRS 9 on Banking Performance and Credit Risk Management of Moroccan Banks: A Panel Data Analysis (2014–2025)

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This paper examines the changes associated with the adoption of IFRS 9 in banking performance and credit risk management among listed Moroccan banks. Although prior studies have analysed the implications of IFRS 9 in several jurisdictions, evidence remains limited for emerging banking systems, particularly in Morocco. Existing research also provides limited longitudinal evidence based on verified bank-level data, especially regarding the differentiated post-adoption behaviour of expected credit loss provisions, coverage ratios and profitability indicators.

To address this gap, the study uses a hand-collected panel of five listed Moroccan banks over the period 2014–2025, based on published IFRS-consolidated and PCEC financial statements. A fixed-effects panel estimator is applied around the 2018 IFRS 9 adoption date controlling for credit risk expected credit losses and leverage. Given the limited number of banks and the common timing of IFRS 9 adoption, the results are interpreted as observed associations and post-adoption changes rather than as definitive causal effects.

The findings highlight three main results, First, IFRS 9 is associated with greater informational transparency through more granular credit-risk disclosures and stage-level ECL reporting but this does not translate into a homogeneous increase in the headline loan loss coverage ratio. Second, ECL provisions appear sensitive to macroeconomic shocks particularly during the COVID-19 period suggesting a more forward-looking recognition of credit risk. Third, profitability indicators declined on average after adoption with a pronounced shock in 2020 followed by a heterogeneous recovery across banks in 2021–2025.

The study contributes to the literature on IFRS 9 in emerging economies by providing verified longitudinal evidence from Morocco and by showing that IFRS 9 adoption should be analysed through distinct accounting, prudential and informational dimensions. The results suggest that improved disclosure and more granular credit-risk recognition do not necessarily imply a uniform improvement in underlying financial stability or banking performance.

**Keywords:** IFRS 9, Expected Credit Loss, banking performance, credit risk, Morocco, panel data, fixed effects, NPL, coverage ratio.
**Paper type:** Empirical Research Article
**JEL Classification:** M41, G21, G32, G28

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## 1.Introduction

Since its entry into force on January 1, 2018, IFRS 9 has represented one of the most significant accounting reforms affecting financial institutions. By replacing the incurred loss model of IAS 39 with a forward-looking impairment framework based on Expected Credit Losses (ECL), the standard has profoundly changed the way banks identify, measure and disclose credit risk. Under IAS 39, impairment losses were mainly recognised when objective evidence of loss had already occurred. IFRS 9, by contrast, requires banks to anticipate expected credit losses by incorporating past events, current conditions and forward-looking information into their provisioning models.

This transition has important implications for banks' accounting practices, risk-management systems and financial communication. The three-stage classification introduced by IFRS 9 distinguishes between performing exposures, exposures with a significant increase in credit risk and credit-impaired assets. This framework is expected to improve the timeliness and granularity of credit-risk recognition. However, its implications for profitability, provisioning behaviour and prudential indicators remain theoretically and empirically ambiguous. Earlier recognition of expected losses may increase provisions and reduce short-term profitability, while more timely disclosure may improve the visibility of credit risk without necessarily reducing the underlying risk itself.

The adoption of IFRS 9 has generated a growing body of empirical research. Prior studies have examined its implications for credit-risk measurement, provision volatility, earnings management, liquidity creation, regulatory capital and bank performance in different institutional contexts. Engelmann and Pham (2020) highlight the relevance of the ECL framework for credit-risk measurement, while Eyalsalman et al. (2024) document increased provision volatility following adoption. Pastiranová and Witzany (2021) analyse the effects of IFRS 9 in the Czech banking sector, and Ghosh (2024) examines its implications for bank liquidity creation. In the MENA region, Ben Ltaief and Moalla (2023) study the effect of IFRS 9 classification on firm value, while Abuaddous (2025) provides evidence from Gulf banking institutions.

Despite this growing literature, empirical evidence on IFRS 9 in North African banking systems remains limited. In particular, the Moroccan case is still underdocumented from a longitudinal, bank-level perspective. Existing studies often rely on aggregate indicators, estimated data or broader cross-country samples, leaving limited evidence on how IFRS 9 is reflected in verified published financial statements at the level of individual banks. This gap is important because the implementation of IFRS 9 in emerging banking systems may be shaped by specific institutional conditions, supervisory practices, data availability and bank-level heterogeneity.

Morocco provides a relevant setting for examining these issues. The Moroccan banking sector operates under the supervision of Bank Al-Maghrib and combines international financial reporting requirements with domestic prudential oversight. This institutional environment makes it possible to analyse IFRS 9 not only as a technical accounting change, but also as a mechanism through which banks respond to expectations of transparency, comparability and credit-risk discipline. From an agency theory perspective, more granular disclosures may reduce information asymmetry between bank managers and external stakeholders. From an institutional theory perspective, IFRS 9 adoption reflects the alignment of Moroccan banks with international accounting standards and supervisory expectations. However, these theoretical mechanisms do not imply that improved disclosure automatically leads to stronger financial stability or better performance.

This article addresses this gap by mobilising a hand-built longitudinal dataset covering five Moroccan listed banks BCP, Attijariwafa Bank, BMCI, Bank of Africa and CIH Bank over the period 2014–2025. The dataset is constructed from published IFRS-consolidated and statutory

PCEC financial statements, with particular attention to traceability, comparability and the distinction between IAS 39 and IFRS 9 reporting periods. The study focuses on profitability indicators, credit-risk indicators, coverage ratios, cost of risk and ECL-related disclosures.

The central research question is therefore formulated as follows: *To what extent is the adoption of IFRS 9 associated with changes in the profitability, credit-risk recognition and disclosure practices of listed Moroccan banks over the period 2014–2025?*

To answer this question, the article pursues three objectives. First, it examines post-adoption changes in profitability and credit-risk indicators among listed Moroccan banks. Second, it analyses ECL dynamics and stage-level disclosures in order to assess the responsiveness of credit-risk recognition. Third, it discusses how the observed patterns inform agency theory and institutional theory in the context of accounting standard adoption in an emerging banking system.

The remainder of the article is organised as follows. Section 2 presents literature review and research hypotheses. Section 3 describes the methodology, the data extraction protocol, the sample and the econometric specification. Section 4 reports empirical results. Section 5 discusses the findings in relation to research hypotheses and theoretical framework. Section 6 concludes with recommendations, limitations and future research directions.

## 2. Literature Review and Research Hypotheses

### 2.1 IFRS 9, Expected Credit Losses and the theoretical debate

The adoption of IFRS 9 represents a major shift in the accounting treatment of credit risk. Unlike IAS 39, which relied on an incurred loss model and recognised impairment only after objective evidence of credit deterioration, IFRS 9 introduced a forward-looking Expected Credit Loss framework. This model requires banks to incorporate available and supportable information including macroeconomic expectations and borrower-specific risk characteristics, into the measurement of credit losses. As a result, IFRS 9 is generally expected to improve the timeliness of risk recognition and the informational content of financial statements.

However, the expected effects of IFRS 9 remain theoretically and empirically ambiguous. From an agency theory perspective more granular and timely disclosures should reduce information asymmetry between bank managers, regulators, investors and other external stakeholders. The three-stage classification of credit exposures and the publication of ECL-related information may therefore strengthen the visibility of credit risk and limit managerial discretion in the delayed recognition of impairments. In this sense, IFRS 9 can be interpreted as an accounting mechanism that improves informational transparency.

From an institutional theory perspective, the adoption of IFRS 9 also reflects the pressure exerted by international standard-setting bodies, prudential regulators and financial markets toward greater comparability and discipline in credit-risk reporting. Banks operating in emerging economies may adopt IFRS 9 not only as a technical accounting requirement, but also as a response to institutional expectations of legitimacy, transparency and alignment with international banking practices.

Nevertheless, these theoretical mechanisms should not be interpreted as implying an automatic improvement in financial performance or financial stability. Greater transparency may reveal existing risks more clearly without reducing the underlying risk itself. Similarly, higher provisions or an increase in the cost of risk may reflect either more prudent and forward-looking provisioning or a genuine deterioration in portfolio quality. This distinction is essential for interpreting the post-adoption effects of IFRS 9.

### 2.2 IFRS 9 and bank profitability: between short-term pressure and long-term discipline

The literature identifies two competing channels through which IFRS 9 may affect bank

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profitability. The first channel is mechanical and short-term. Because the ECL model requires the earlier recognition of expected losses, banks may record higher impairment allowances at or shortly after adoption. This can compress net income, reduce return on assets and return on equity, and create temporary pressure on profitability indicators. Eyalsalman et al. (2024), for example, document increased provision volatility following IFRS 9 adoption, suggesting that the forward-looking nature of the model can affect reported earnings.

The second channel is more disciplinary and medium-term. By encouraging earlier risk detection and more systematic provisioning, IFRS 9 may help banks avoid delayed loss recognition and sudden impairment shocks. Engelmann and Pham (2020) argue that the ECL framework can improve credit-risk measurement, while Kyiu and Tawiah (2023), in a broad international study, show that forward-looking provisioning may enhance market discipline and reduce overall bank risk. In the same vein, Akgün (2022) finds that earlier IFRS 9 adopters in Europe tend to display better risk-adjusted performance over the medium term.

Empirical findings, however, remain context dependent. Abuaddous (2025), using GMM and difference-in-differences methods on Gulf banks, finds that IFRS 9 did not generate major disruption in loan loss provisions or non-performing loans. Dong and Oberson (2022), in the European banking sector, show that capital transitional arrangements helped smooth the initial equity impact of ECL recognition. Awuye and Taylor (2024), through a systematic review of IFRS 9 studies, conclude that the effect on performance is often transitory rather than structural, particularly for well-capitalised banks. Conversely, Idris et al. (2025) show that investors in Jordanian banks initially reacted negatively to IFRS 9 adoption, suggesting that markets may penalise the immediate increase in provisioning before reassessing its prudential implications.

These findings reveal an important tension in literature. IFRS 9 may improve the discipline of credit-risk recognition, but this improvement can initially appear as lower profitability or higher earnings volatility. Therefore, the relationship between IFRS 9 and bank profitability should not be interpreted in a linear way. It depends on the position of banks, portfolio quality, provisioning practices, regulatory arrangements and the broader macroeconomic environment.

### 2.3 IFRS 9, credit portfolio quality and prudential indicators

A second stream of literature examines the relationship between IFRS 9 and credit portfolio quality. The three-stage ECL model provides a more granular representation of credit deterioration by distinguishing between performing exposures, exposures with a significant increase in credit risk and credit-impaired assets. This staging system is expected to improve the informational visibility of credit risk and to provide financial statement users with a more detailed understanding of portfolio quality. Rodriguez-Rodriguez and Jaramillo-Calle (2024) emphasise that the staging approach contributes to a more faithful representation of credit risk by combining accounting classification with forward-looking information.

However, the effect of IFRS 9 on prudential indicators such as the loan loss coverage ratio is not straightforward. The coverage ratio depends on both the level of provisions and the volume of recognised non-performing exposures. A higher coverage ratio may indicate stronger provisioning, but a stable or declining ratio after IFRS 9 does not necessarily imply weaker prudence. It may also result from a broader recognition of doubtful exposures, changes in classification practices or denominator effects linked to the increase in reported NPLs. For this reason, the coverage ratio must be interpreted as a prudential indicator, not as a direct measure of transparency.

Several studies support the idea that IFRS 9 improves the quality of accounting information, but with heterogeneous consequences across contexts. Norouzpour, Nikulin and Downing (2023) show that IFRS 9 reduces income smoothing through provisions, thereby strengthening the reliability of financial statements. Utami et al. (2023) find that IFRS 9 improves the value relevance of accounting information in Asia-Pacific countries. Ghosh (2024), however,

provides a more nuanced view by showing that IFRS 9 may redistribute liquidity creation between the asset and liability sides of bank balance sheets without necessarily affecting total liquidity creation.

The emerging-market context introduces an additional layer of complexity. Mooneeapen and de Jager (2025), in a global study of banks, show that IFRS 9 may mitigate the procyclicality of loan loss provisions in advanced economies, while worsening it in emerging and developing economies. This result is particularly important because it suggests that the same accounting standard may produce different effects depending on institutional quality, data availability, supervisory capacity and banks' internal modelling infrastructure. Similarly, Lopez-Espinosa and Penalva (2023) show that the interaction between IFRS 9 and the COVID-19 shock placed pressure on lending and regulatory capital in Spanish banks. The World Bank (2021) also highlights that banks in emerging markets often face difficulties related to data scarcity, modelling capacity and regulatory heterogeneity, which may limit the full benefits of IFRS 9 implementation.

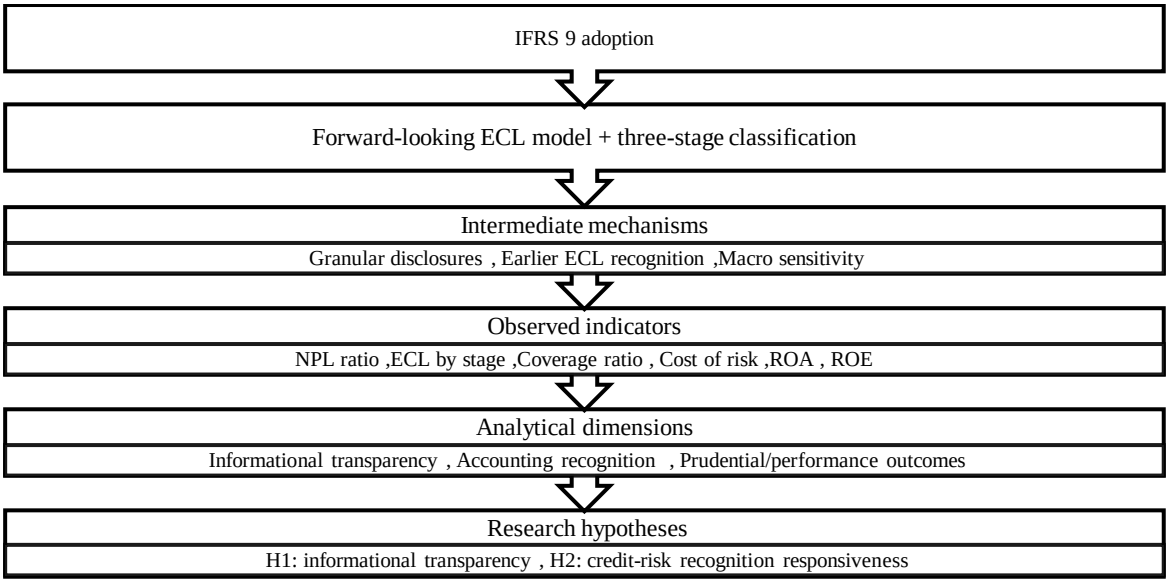
Thus, the literature does not support a simple conclusion that IFRS 9 automatically improves credit portfolio quality or financial stability. Rather, it suggests that IFRS 9 increases the visibility and responsiveness of credit-risk recognition, while its effects on prudential ratios, profitability and resilience remain contingent on institutional and bank-specific conditions.

### 2.4 Conceptual framework

Based on the literature, IFRS 9 can be understood as operating through three main mechanisms. The first mechanism is informational: the standard increases the granularity of credit-risk disclosures through NPL information, ECL amounts and stage-level classifications. The second mechanism is accounting-based: IFRS 9 changes the timing and measurement of credit-loss recognition through forward-looking ECL estimates. The third mechanism is prudential and performance-related: changes in provisioning may affect coverage ratios, cost of risk, profitability and resilience during periods of macroeconomic stress.

The conceptual logic of the study can therefore be summarised as follows:

***Figure 1. Conceptual framework linking IFRS 9 to information, accounting and prudential dimensions***




***Sources: The Authors 2026***

This framework clarifies that informational transparency, accounting recognition and prudential stability are related but distinct dimensions. Improved disclosure may enhance the visibility of risk without necessarily improving the underlying quality of credit portfolios. Similarly, higher

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provisioning may indicate greater prudence, but it may also reveal increased credit stress. This distinction guides the formulation of the research hypotheses.

### 2.5 Research hypotheses

Drawing on agency theory, institutional theory and the empirical debate reviewed above, this study formulates two research hypotheses.

The first hypothesis concerns the informational dimension of IFRS 9. From an agency theory perspective, mandatory and more granular credit-risk disclosures may reduce information asymmetry between bank managers and external stakeholders. IFRS 9 is expected to improve the visibility of credit risk through the publication of NPL indicators, ECL information and stage-level classifications. However, transparency should not be confused with an automatic improvement in prudential ratios. In particular, the loan loss coverage ratio is influenced not only by the level of provisions, but also by changes in the recognition and measurement of non-performing exposures.

**H1:** IFRS 9 adoption is associated with improved informational transparency in Moroccan banks, as reflected in the availability and granularity of credit-risk disclosures, particularly NPL ratios and stage-level ECL information, while changes in the loan loss coverage ratio are interpreted as complementary prudential evidence rather than as a direct proxy for transparency.

The second hypothesis concerns the responsiveness of credit-risk recognition. From an institutional perspective, IFRS 9 encourages banks to align their provisioning systems with international standards and supervisory expectations. The forward-looking ECL model may lead banks to recognise credit deterioration earlier, particularly during periods of macroeconomic stress. Nevertheless, an increase in the cost of risk cannot be interpreted mechanically as evidence of stronger financial stability, since it may reflect either more prudent provisioning or a deterioration in credit quality. For this reason, ECL dynamics and cost-of-risk adjustments are interpreted in this study as indicators of provisioning responsiveness rather than as direct measures of financial stability.

**H2:** IFRS 9 adoption is associated with greater responsiveness of credit-risk recognition in Moroccan banks, as reflected in ECL dynamics and cost-of-risk adjustments during normal and stress periods, without assuming that higher provisioning automatically implies stronger financial stability.

## 3. Methodology

### 3.1 Research Design and Methodological Positioning

This study examines the post-adoption changes associated with IFRS 9 in the performance and credit-risk indicators of Moroccan listed banks. IFRS 9 became effective for annual periods beginning on or after 1 January 2018 and introduced an impairment framework based on Expected Credit Losses (ECL), replacing the incurred loss model previously applied under IAS 39. Under this framework, banks are required to recognise expected credit losses by considering past events, current conditions and forward-looking information.

The empirical strategy adopted in this article is designed as a longitudinal bank-level analysis rather than as a full causal identification design. This distinction is essential. Since all Moroccan banks adopted IFRS 9 at the same regulatory date, the study does not benefit from a natural control group or from staggered adoption across banks. Consequently, the IFRS 9 dummy used in the baseline model should not be interpreted as a clean causal treatment effect. It captures average within-bank post-adoption changes associated with the IFRS 9 implementation period, conditional on the included controls.

The methodological objective is therefore threefold. First, the study documents the evolution of profitability and credit-risk indicators before and after IFRS 9 adoption. Second, it examines

whether the post-2018 period is associated with changes in provisioning behaviour, coverage ratios and ECL dynamics. Third, it evaluates whether these changes are homogeneous across banks or shaped by bank-specific characteristics, data availability and macroeconomic shocks, particularly the COVID-19 episode.

This positioning responds to the limited size of the Moroccan listed banking market. The analysis is not intended to produce broad statistical generalisations for all emerging banking systems, but to provide transparent, bank-level empirical evidence on a North African banking sector where IFRS 9 adoption remains underdocumented.

### 3.2 Data, Extraction Protocol and Sample

The empirical analysis focuses on five Moroccan banks listed on the Casablanca Stock Exchange: Banque Centrale Populaire (BCP), Attijariwafa Bank (ATW), BMCI, Bank of Africa (BOA) and CIH Bank. These institutions represent a substantial part of the Moroccan banking sector and cover different business profiles, including universal banking, international subsidiaries, pan-African banking activity and real-estate-oriented banking models.

The choice of Morocco is relevant for two reasons. First, the Moroccan banking sector is supervised by Bank Al-Maghrib, which publishes annual banking supervision reports documenting the structure, risks and prudential developments of the sector. Second, the Moroccan case allows the analysis of IFRS 9 in an emerging economy where banks are subject to both international accounting standards and local prudential supervision.

The dataset was built manually from publicly available financial reports. Each observation was extracted bank by bank and year by year from consolidated IFRS financial statements and statutory PCEC financial statements published by the banks. For each extracted value, the corresponding source document, note and page number were recorded in a separate extraction file. This protocol was adopted to ensure traceability, transparency and reproducibility.

No financial value was estimated or interpolated. When a bank did not disclose a specific indicator for a given year, the observation was recorded as not available rather than reconstructed indirectly. This choice preserves the integrity of the dataset, even though it produces an unbalanced panel for some variables.

The study covers the period 2014-2025. The pre-adoption period corresponds to 2014-2017, when impairment was governed by IAS 39. The post-adoption period begins in 2018, corresponding to the first year of IFRS 9 implementation. The full period also captures the COVID-19 shock in 2020 and the subsequent recovery phase during 2021-2025.

***Table 1. Sample description***

| Bank | Group | Total assets FY2025 (MDH) | Listed | IFRS 9 adoption | Specificity |
|---|---|---|---|---|---|
| BCP | Banque Populaire | 571,244 | Yes | 2018 | Large cooperative banking group |
| ATW | Attijariwafa Bank | 795,461 | Yes | 2018 | Leading private banking group |
| BMCI | BNP Paribas Group | 78,577 | Yes | 2018 | International subsidiary |
| BOA | BCP Group | 437,678 | Yes | 2018 | Pan-African banking presence |
| CIH | CDG Group | 163,688 | Yes | 2018 | Mortgage and real-estate-oriented bank |

***Source: Authors' calculations based on hand-extracted consolidated annual reports.***

### 3.3 Variable Construction and Measurement Conventions

The variables used in the empirical analysis are constructed from published accounting data. Particular attention is paid to comparability between the IAS 39 and IFRS 9 periods. Since the

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transition to IFRS 9 changed the impairment framework, some variables are not perfectly equivalent before and after 2018. The methodology therefore distinguishes between variables that are directly comparable over the full period and variables that are only observable after IFRS 9 adoption.

***Table 2. Variables, formulas and measurement conventions***

| Variable | Role in the model | Formula | Measurement convention |
|---|---|---|---|
| ROA | Dependent variable | Net income / Total assets | Comparable over 2014-2025 |
| ROE | Dependent variable | Net income / Equity | Comparable over 2014-2025 |
| Coverage ratio | Dependent variable | Loan-loss provisions / Doubtful loans | Used with caution because numerator and denominator may be affected by classification and disclosure conventions |
| Cost of risk | Dependent variable | Cost-of-risk expense / Gross loans x 10,000 | Expressed in basis points |
| NPL ratio | Explanatory variable | Doubtful loans or Stage 3 gross exposures / Gross loans | Comparable with caution because IFRS 9 may broaden the recognition of credit deterioration |
| ECL / Gross loans | Explanatory variable in post-2018 specifications | Total ECL provisions / Gross loans | IFRS 9-specific variable; treated as structurally unavailable before 2018, not as economically zero |
| Leverage | Control variable | Total liabilities / Equity | Controls for bank financial structure |
| IFRS9 dummy | Main post-adoption indicator | 0 for 2014-2017; 1 for 2018-2025 | Interpreted as a post-adoption association, not as a definitive causal effect |
| COVID-19 dummy | Robustness variable | 1 for 2020; 0 otherwise | Captures the exceptional macroeconomic shock of 2020 |

***Source: Authors' construction based on annual reports, IFRS 9 impairment principles and Bank Al-Maghrib supervisory documentation.***

A key methodological adjustment concerns the ECL variable, in the initial specification ECL values could have been coded as zero before 2018. This approach was not retained in the revised methodology because the absence of ECL under IAS 39 is conceptual rather than economic. In other words, ECL did not exist as an accounting category before 2018, but this does not mean that expected credit losses were economically equal to zero. The revised approach therefore treats ECL as structurally unavailable before IFRS 9 and uses it only in post-2018 specifications or in descriptive stage-level analysis.

### 3.4 Econometric Specification

The baseline empirical model relies on a one-way bank fixed-effects panel estimator. This specification controls for time-invariant differences between banks, such as ownership structure, business model, historical risk culture and strategic positioning.
The baseline model is specified as follows:

$$Y\_it = \alpha + \beta 1\ IFRS9\_t + \beta 2\ NPL\_it + \beta 3\ Leverage\_it + \mu\_i + \varepsilon\_it$$

where Y_it represents alternatively ROA, ROE, the coverage ratio and the cost of risk for bank i in year t. IFRS9_t is a post-adoption dummy equal to one from 2018 onward. NPL_it captures the published non-performing loan ratio. Leverage_it controls for the financial structure of each bank u_i represents bank fixed effects, while epsilon_it is the idiosyncratic error term.
The coefficient beta1 is interpreted as the average within-bank change associated with the IFRS 9 adoption period, conditional on the included controls. It is not interpreted as a causal treatment effect because IFRS 9 was adopted simultaneously by all banks and because no untreated comparison group is available.
A second specification is estimated for the post-IFRS 9 period only:

$$Y\_it = \alpha + \beta 1\ ECL\_it + \beta 2\ NPL\_it + \beta 3\ Leverage\_it + \mu\_i + \varepsilon\_it, for\ t \geq 2018$$

This specification examines whether the intensity of ECL provisioning is associated with profitability and risk indicators during the IFRS 9 period. Since all observations in this

specification belong to the post-adoption period, the IFRS9 dummy is not included.
To account for the COVID-19 shock, an alternative specification introduces a specific dummy for 2020:

$$Y\_it = \alpha + \beta 1\ IFRS9\_t + \beta 2\ COVID2020\_t + \beta 3\ NPL\_it + \beta 4\ Leverage\_it + \mu\_i + \varepsilon\_it$$

This specification helps reduce the risk of attributing the exceptional 2020 shock mechanically to IFRS 9 adoption.
Finally, year fixed-effects models are estimated as sensitivity tests:

$$Y\_it = \alpha + \beta 1\ NPL\_it + \beta 2\ Leverage\_it + \mu\_i + \lambda\_t + \varepsilon\_it$$

In this model lambda_t represents year fixed effects. The IFRS9 dummy is omitted because it is collinear with the post-2018 period when full year effects are included. The purpose of this specification is not to estimate IFRS 9 directly, but to verify whether the main patterns remain robust once common yearly shocks are absorbed.

### 3.5 Standard Errors, Small-Sample Inference and Robustness Strategy

The panel contains five banks observed over twelve years, yielding a maximum of 60 bank-year observations before accounting for missing values. This small sample size imposes important econometric limits. In particular, inference based on standard errors clustered at the bank level must be interpreted with caution because the number of clusters is only five. Econometric literature shows that cluster-robust inference can be unreliable when the number of clusters is very small, even if clustering is conceptually appropriate.
For this reason, the empirical analysis does not rely mechanically on one single inference method. The baseline estimates are complemented by several robustness checks:

- Heteroskedasticity-robust standard errors, including small-sample corrections where applicable;
- Bank-clustered standard errors, reported with caution because of the very small number of clusters
- Sensitivity tests excluding the year 2020, in order to isolate the influence of the COVID-19 shock
- Post-2018 specifications using ECL only when conceptually observable;
- Leave-one-bank-out estimations, to verify whether the results are driven by a single bank;
- Influence diagnostics, including the identification of observations with disproportionate leverage on the estimated coefficients;
- multicollinearity checks, especially between NPL, ECL and leverage variables.

Given the small sample, the statistical significance of coefficients is interpreted cautiously. The analysis gives priority to the consistency of signs, the magnitude of estimated associations, the stability of results across specifications and the coherence of findings with the bank-by-bank descriptive evidence.

### 3.6 Treatment of Missing Values and Anomalous Observations

The dataset contains missing values when a bank does not disclose a given indicator for a specific year. Missing observations are not replaced, interpolated or estimated. Each regression table reports the number of observations used allowing the reader to assess comparability across models.
A specific data-quality issue concerns BMCI's coverage ratio for the years 2015-2018. The ratio implied by the raw extracted figures exceeds economically plausible levels, reaching more than 240% and up to 409.6% in 2018. These values appear to reflect a change in the underlying basis of measurement between provisions and doubtful loans rather than a genuine prudential coverage level. In line with the no-estimation principle, these four bank-year observations are

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treated as missing in the cross-bank averages and in the coverage-ratio regression. They are not recalculated or replaced.
To ensure transparency, these observations remain documented in the bank-by-bank extraction table with an explicit anomaly flag. A sensitivity test is also conducted to verify whether the main conclusions on the coverage ratio remain unchanged when these observations are alternatively retained for descriptive purposes. This procedure allows the study to preserve both data integrity and analytical transparency.

### 3.7 Methodological Limitations

The empirical design has several limitations that must be explicitly acknowledged.
First, the sample is limited to five listed banks, this reflects the structure of the Moroccan listed banking sector but it limits the statistical power of the regressions and the generalisability of the results.
Second, all banks adopted IFRS 9 in the same year. The study therefore cannot rely on staggered adoption or on a credible untreated control group. The IFRS9 coefficient may capture other changes occurring after 2018, including regulatory developments, macroeconomic shocks, changes in bank strategy or post-pandemic recovery dynamics.
Third, the post-adoption period includes the COVID-19 shock which directly affected profitability, provisioning and credit-risk indicators. The use of a COVID-19 dummy and the exclusion of 2020 in sensitivity tests reduce this concern but cannot fully eliminate it.
Fourth, some indicators are affected by changes in accounting classification between IAS 39 and IFRS 9. This is particularly relevant for ECL, Stage 3 exposures, NPL recognition and the coverage ratio. For this reason, the study distinguishes informational transparency, accounting recognition and prudential-performance outcomes rather than treating all indicators as equivalent measures of financial stability.
Despite these limitations, the methodology offers two main strengths. It is based on verified bank-level data extracted directly from published financial statements and it applies a transparent set of formulas and robustness checks. The results should therefore be interpreted as contextualised empirical evidence on IFRS 9 adoption in Morocco rather than as definitive causal estimates.

## 4. Results and Analysis

### 4.1 Evidence hierarchy and reporting strategy

***Table 3. Hierarchy of empirical evidence and key messages***

| Analytical block | Main empirical message | Interpretive role |
|---|---|---|
| Profitability (ROA, ROE) | 2020 represents the clearest profitability trough; the post-pandemic recovery is uneven across banks. | Supports a cautious interpretation: profitability changes are not mechanically attributable to IFRS 9 alone. |
| Coverage ratio | No homogeneous post-2018 increase is observed; the ratio is affected by both provisions and recognised NPLs. | Requires a numerator-denominator interpretation rather than a simple prudential narrative. |
| Cost of risk | The 2020 peak is visible across banks, but post-2021 trajectories differ substantially. | Suggests responsiveness to stress, with heterogeneous intensity across banks. |
| ECL by stage | Stage 3 dominates total ECL, while Stage 1 and Stage 2 react visibly around the COVID-19 shock. | Consistent with forward-looking credit-risk recognition, especially during stress periods. |
| Stage shares | Stage 1 falls and Stage 2 peaks in 2020, then gradually normalises during 2021-2025. | Provides evidence of early-warning behaviour without implying uniform financial stability improvement. |

***Source: Authors' synthesis based on hand-extracted data, 2014-2025.***

The empirical material collected for this study is intentionally rich because each observation was manually extracted from published bank reports. However, the revised presentation distinguishes between evidence required for traceability and evidence required for argumentation. The detailed annual bank-by-bank tables are retained as appendices, while the body of the article now focuses on the cross-cutting patterns that directly inform the research hypotheses.

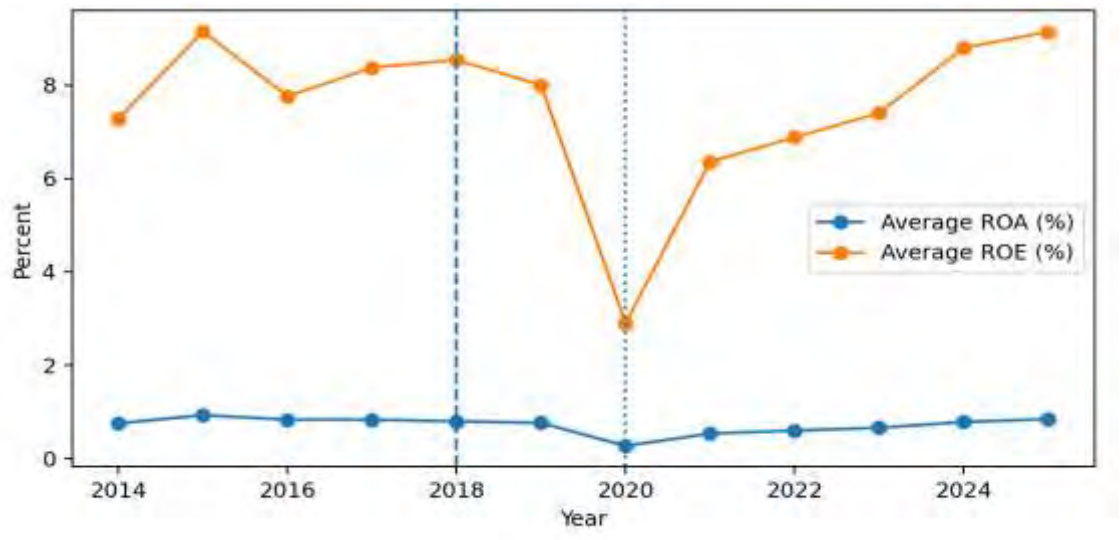
The results are therefore organised around four levels of evidence: 1) descriptive bank-by-bank trajectories, 2) aggregate pre/post IFRS 9 comparisons, 3) fixed-effects estimates interpreted with methodological caution, and 4) robustness and sensitivity checks. This hierarchy avoids a purely narrative reading of year-to-year changes and gives priority to mechanisms that are relevant for the hypotheses: informational transparency, credit-risk recognition responsiveness, coverage-ratio mechanics and interbank heterogeneity.

### 4.2 Descriptive trajectories: profitability, provisioning and risk visibility

The descriptive evidence confirms that the Moroccan listed banks did not follow a uniform post-IFRS 9 trajectory. Profitability indicators show a visible break in 2020 rather than a clear and immediate break in 2018. This pattern suggests that the COVID-19 macroeconomic shock played a major role in the observed profitability decline. The interpretation should therefore remain cautious: the post-adoption period combines the accounting transition to IFRS 9, the pandemic shock, post-pandemic normalisation and bank-specific strategic adjustments.

The evolution of ROA and ROE is particularly heterogeneous. Attijariwafa Bank shows the strongest recovery by 2024-2025, while BMCI remains below its pre-adoption profitability levels for much of the post-2020 period. CIH displays a sharp 2020 trough followed by a rapid rebound, whereas BCP and BOA follow more gradual recovery paths. These patterns suggest that bank-specific business models and portfolio structures matter as much as the common accounting reform.

***Figure 2. Average profitability indicators (2014-2025)***




***Source: Authors' calculations based on annual bank-level ROA and ROE data.***

The coverage ratio provides the most important prudential nuance of the results. A stable or declining coverage ratio after IFRS 9 should not be interpreted mechanically as a decline in prudence. The ratio depends simultaneously on the stock of provisions and on the recognised base of doubtful exposures. IFRS 9 may increase the visibility and recognition of credit-impaired exposures, which increases the denominator of the ratio. If the denominator expands

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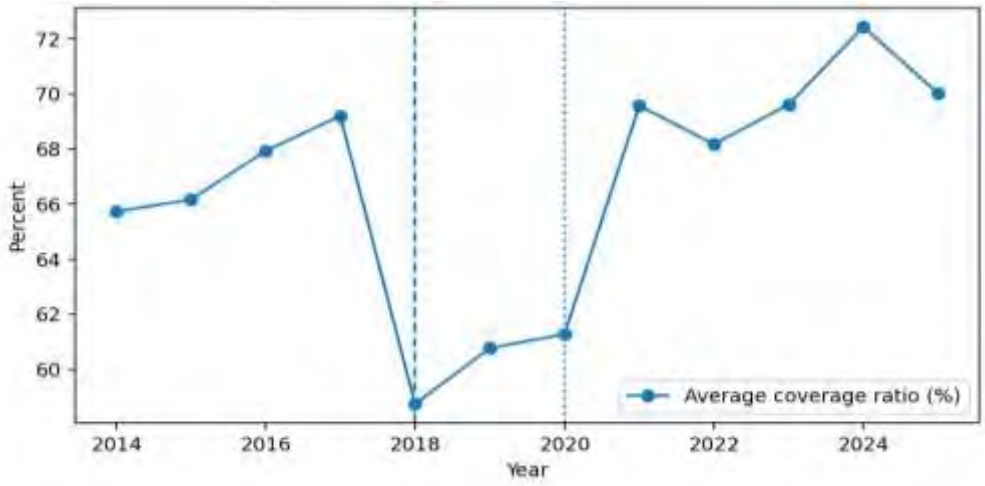
faster than the numerator, the coverage ratio may decline even when provisioning effort increases in absolute terms.

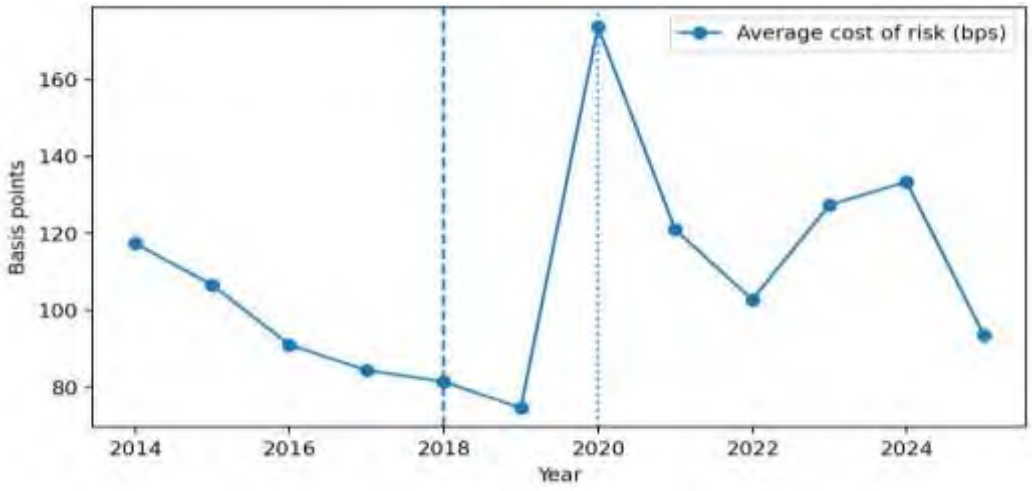
***Figure 3. Average coverage ratio (2014-2025)***




***Source: Authors' calculations based on published annual coverage ratios.***

The cost of risk is more directly linked to provisioning intensity, but its interpretation also requires caution. A higher cost of risk may reflect more prudent and forward-looking recognition of risk, but it may also indicate genuine deterioration in credit quality. The peak observed in 2020 across the sample is therefore interpreted as evidence of provisioning responsiveness during a stress episode, not as a direct proof of stronger financial stability.

***Figure 4. Average cost of risk (2014-2025)***




***Source: Authors' calculations based on published cost-of-risk data.***

### 4.3 Aggregate pre/post comparison and fixed-effects evidence

Table 4 summarises the raw pre/post IFRS 9 comparison. These unweighted averages are useful as a first descriptive benchmark, but they should not be read as causal estimates. The post-2018 period contains IFRS 9 implementation, the COVID-19 shock and subsequent recovery dynamics. The comparison is therefore interpreted as a preliminary indication of post-adoption changes rather than as proof of an isolated IFRS 9 effect.

***Table 4. Aggregate pre/post IFRS 9 comparison***

| Indicator | Mean pre-IFRS 9 (2014-2017) | Mean post-IFRS 9 (2018-2025) | Raw change | Interpretation |
|---|---|---|---|---|
| ROA (%) | 0.83 | 0.66 | -0.18 pp | Profitability decline is concentrated around 2020 and is heterogeneous across banks. |
| ROE (%) | 8.07 | 7.25 | -0.82 pp | Same pattern as ROA, with leverage amplifying differences. |
| Coverage ratio (%) | 67.26 | 66.44 | -0.81 pp | Apparent stability masks strong bank-specific trajectories and denominator effects. |
| Cost of risk (bps) | 99.85 | 113.50 | +13.65 bps | Increase is largely stress-related and uneven across banks. |
| NPL ratio (%) | 6.56 | 9.76 | +3.20 pp | Partly reflects greater visibility and disclosure granularity after IFRS 9. |
| ECL / Gross loans (%) | n/a | Post-2018 only | IFRS 9 metric | Conceptually observable only during the IFRS 9 period. |

***Source: Authors' calculations based on hand-extracted data. ECL is not treated as economically zero before 2018.***

Econometric evidence should be read in the same disciplined way. The fixed-effects estimator compares each bank with itself over time and controls time-invariant bank characteristics. However, because all banks adopted IFRS 9 in the same year and because the sample is intentionally restricted to listed banks, the IFRS 9 coefficient captures an average within-bank post-adoption association rather than a definitive causal treatment effect.

Where the fixed-effects estimates are retained, two safeguards are required in the interpretation. First, statistical significance must be considered cautiously because the number of bank clusters is small. Second, ECL-related variables should be analysed in post-2018 specifications, since ECL is an IFRS 9-specific construct and was not conceptually observable under IAS 39. The final regression tables should therefore distinguish the full-period pre/post specification from post-2018 ECL specifications.

***Table 5. Revised econometric reporting logic***

| Specification | Core variables | Purpose | Interpretation rule |
|---|---|---|---|
| Full-period FE model | IFRS9 dummy, NPL ratio, leverage, bank fixed effects | Used to identify post-adoption associations; ECL should not be coded as zero before 2018. | Interpret IFRS9 coefficient cautiously. |
| Post-2018 ECL model | ECL / gross loans, NPL ratio, leverage, bank fixed effects | Used to examine whether ECL intensity is associated with profitability and prudential indicators during IFRS 9 period. | No IFRS9 dummy because all observations are post-adoption. |
| COVID-19 sensitivity model | IFRS9 dummy, COVID2020 dummy, NPL ratio, leverage, bank fixed effects | Used to reduce the risk of attributing the 2020 macroeconomic shock to IFRS 9. | Report whether signs and magnitudes remain stable. |
| Year fixed-effects model | NPL ratio, leverage, bank and year fixed effects | Absorbs common annual shocks; IFRS9 dummy omitted because it is collinear with year effects. | Used as a sensitivity test, not as a direct IFRS 9 estimate. |

***Source: Authors' 2026***

## 4.4 ECL and stage-level evidence

The ECL evidence provides a direct view of the IFRS 9 mechanism because it is observable

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only from the adoption period onward. Aggregate ECL provisions increase from MDH 64.4 billion in 2018 to MDH 96.6 billion in 2025. The largest annual increase occurs in 2020, when total ECL rises sharply, consistent with greater sensitivity of provisioning to the COVID-19 shock. This evidence is not interpreted as a proof of uniform stability improvement, but as an indication that credit-risk recognition became more responsive to stress conditions.

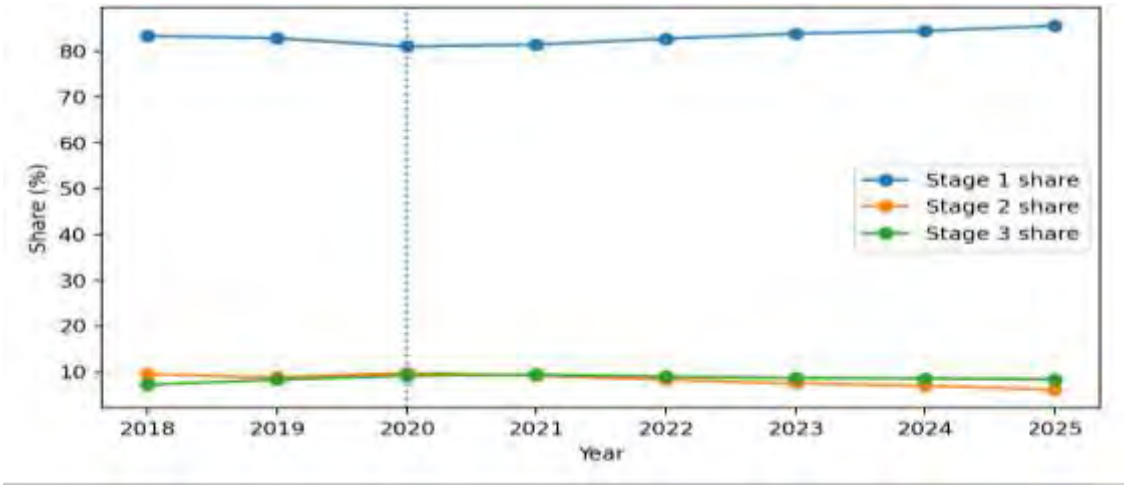
***Table 6. Synthetic ECL evidence by key year***

| Year | Total ECL (MDH) | Interpretive message |
|---|---|---|
| 2018 | 64,374 | First IFRS 9 application |
| 2020 | 81,597 | Sharpest stress-year increase; Stage 1 and Stage 2 provisions rise. |
| 2024 | 95,096 | Stage 3 share reaches a high level in absolute terms. |
| 2025 | 96,579 | Growth slows, suggesting post-pandemic provisioning normalisation. |

***Source: Authors' calculations from published IFRS 9 notes, 2018-2025.***

Stage-share dynamics reinforce this interpretation. The Stage 1 share falls from 82.8% in 2019 to 81.0% in 2020, while the Stage 2 share rises from 8.8% to 9.8%. This pattern is consistent with an early-warning mechanism: exposures are not necessarily defaulted yet, but their credit risk is recognised as having deteriorated. The subsequent recovery in the Stage 1 share and decline in Stage 2 during 2021-2025 indicate a gradual normalisation after the pandemic shock.

***Figure 5. Aggregate stage 1/2/3 outstanding shares (2018-2025)***




***Source: Authors' calculations based on published year-end Stage 1/2/3 outstanding stocks.***

### 4.5 Robustness and sensitivity checks

Several robustness and sensitivity checks are introduced to address the main risks identified in the empirical design: the influence of the COVID-19 year, the dominance of individual banks, the sensitivity of the coverage ratio to extreme observations and the mechanical effect of alternative time windows. The checks below are reported as descriptive robustness tests using the available bank-year indicators. Additional econometric robustness tables should be completed once the revised panel models are re-estimated with the full set of controls.

These checks support two cautious conclusions. First, the main profitability decline is not a simple IFRS 9 transition effect; it is strongly influenced by the 2020 macroeconomic shock. Second, the evidence on coverage and cost of risk is more sensitive to bank composition and measurement conventions than the evidence on risk-disclosure granularity. The robustness strategy therefore reinforces the need to interpret the results as observed post-adoption associations rather than as definitive causal estimates.

***Table 7. Robustness and sensitivity checks***

| Robustness check | Purpose | Observed or required output | Interpretation |
|---|---|---|---|
| Excluding 2020 | Removes the COVID-19 shock from post-IFRS 9 averages. | ROA softens from -0.18 pp to -0.12 pp; ROE from -0.82 pp to -0.20 pp; cost-of-risk increase falls from +13.65 bps to +5.04 bps. | Confirms that 2020 drives a substantial part of the profitability and provisioning break. |
| Symmetric window 2014-2017 vs. 2018-2021 | Compares equal-length pre/post windows. | ROA: -0.24 pp; ROE: -1.62 pp; coverage: -4.84 pp; cost of risk: +12.85 bps. | The early post-adoption window is strongly affected by the pandemic shock. |
| Leave-one-bank-out descriptive averages | Tests whether raw pre/post patterns are driven by one institution. | ROA and ROE declines remain negative after excluding each bank; coverage and cost-of-risk effects are more sensitive to bank composition. | Supports heterogeneity rather than a single-bank narrative. |
| Winsorised descriptive averages | Limits the influence of extreme observations. | ROA and ROE patterns remain negative; coverage becomes almost flat/slightly positive; cost of risk remains higher post-adoption. | Shows that coverage conclusions are sensitive to ratio mechanics and outliers. |
| Time fixed-effects model | Controls for shocks common to all banks in a given year. | To be reported after re-estimation. | Expected to reduce over-attribution of common shocks to IFRS 9. |
| Post-2018 ECL specification | Uses ECL only when conceptually observable. | To be reported after re-estimation. | Needed to avoid artificial pre-2018 ECL coding. |

***Source: Authors' calculations and revised methodological strategy. Econometric outputs marked as to be reported require re-estimation with the full panel dataset.***

# 5. Discussion

## 5.1 Criteria for hypothesis assessment

To avoid an ex-post and overly flexible validation of the hypotheses, the discussion uses explicit criteria of support. The hypotheses are not assessed only on the basis of whether one indicator increases or decreases. They are evaluated according to the consistency between the empirical evidence, the theoretical mechanism and the measurement limits of each indicator.

***Table 8. Ex ante criteria for hypothesis assessment***

| Hypothesis | Strong support | Partial support | No support |
|---|---|---|---|
| H1 - Informational transparency | More granular and consistently available NPL and ECL disclosures, with improved visibility of credit-risk structure. | Disclosure granularity improves, but prudential ratios such as the coverage ratio do not improve uniformly. | No improvement in disclosure availability or credit-risk visibility. |
| H2 - Credit-risk recognition responsiveness | ECL and cost-of-risk indicators react consistently to risk deterioration across most banks and during stress periods. | Responsiveness is visible during stress periods or for some banks, but not homogeneous across the sample. | No observable reaction of ECL, cost of risk or stage shares to credit-risk deterioration. |

***Source: Authors' conceptual framework.***

## 5.2 H1: informational transparency and coverage-ratio mechanics

H1 is partially supported. The strongest support concerns the informational dimension of IFRS 9. From 2018 onward, the availability of NPL ratios, ECL amounts and stage-level classifications improves the visibility of credit risk. This is directly consistent with the agency-

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theory mechanism: more granular disclosure reduces information asymmetry between bank managers, regulators, investors and other users of financial statements.
However, H1 is not supported if it is interpreted as predicting a homogeneous increase in the coverage ratio. This distinction is central. The coverage ratio is not a pure measure of transparency; it is a prudential ratio affected by both the numerator and the denominator. Its evolution may reflect changes in provisions, changes in recognised doubtful exposures, differences in classification rules and portfolio composition.

***Formalising the coverage-ratio mechanism***

The coverage ratio can be written as follows:
**Coverage ratio = Loan-loss provisions / Recognised non-performing exposures**
Therefore, a decline in the coverage ratio does not necessarily mean lower provisioning effort. If IFRS 9 increases the recognised perimeter of doubtful or credit-impaired exposures, the denominator may rise faster than the numerator. In that case, the ratio can fall despite an absolute increase in provisions.

***Table 9. Simple numerical illustration of the coverage-ratio denominator effect***

| Scenario | Provisions | Recognised NPLs | Coverage ratio |
|---|---|---|---|
| Before IFRS 9 | 70 | 100 | 70.0% |
| After IFRS 9 | 80 | 130 | 61.5% |
| Change | +10 | +30 | -8.5 pp |

***Source: Authors' illustrative example.***

This example formalises the paper's key prudential nuance. The post-adoption stability or decline of the coverage ratio may be mechanically compatible with greater credit-risk visibility. IFRS 9 can make the doubtful-loan base broader and more granular; if provisions increase less rapidly than the recognised NPL base, the headline coverage ratio declines. Consequently, H1 should be interpreted as supported for informational transparency, but not for a uniform numerical improvement in prudential ratios.

### 5.3 H2: responsiveness of credit-risk recognition

H2 is also partially supported. The ECL and stage-level evidence indicates that credit-risk recognition became more responsive during the COVID-19 shock. The rise in aggregate ECL in 2020, combined with the increase in the Stage 2 share, is consistent with forward-looking recognition of credit deterioration before all exposures become fully non-performing. This supports the view that IFRS 9 strengthens the timeliness of risk recognition.
Nevertheless, the evidence does not justify the stronger claim that IFRS 9 automatically enhances financial stability. Cost-of-risk trajectories are heterogeneous: some banks show structurally higher provisioning intensity after 2018, while others show a decline or normalisation after the pandemic. A higher cost of risk may signal prudence, but it may also signal a worsening loan portfolio. For this reason, H2 is better interpreted as evidence of credit-risk recognition responsiveness rather than direct evidence of stronger financial stability.

### 5.4 Theoretical implications

The findings refine the agency-theory argument. IFRS 9 appears to improve the information environment by expanding the availability and granularity of credit-risk disclosures. Yet the Moroccan evidence shows that improved transparency is not equivalent to improved prudential ratios. The same mechanism that reduces information asymmetry can also reveal a larger stock of doubtful exposures, thereby mechanically altering ratios such as the coverage ratio.
The results also nuance the institutional-theory argument. Adoption of an international accounting standard does not produce homogeneous outcomes across banks simply because the rule is common. Banks respond within different institutional, organisational and portfolio

contexts. The heterogeneity observed across ATW, BCP, BMCI, BOA and CIH suggests that international accounting convergence improves comparability at the disclosure level but does not eliminate differences in risk structure, provisioning practices or business models.
The theoretical contribution is therefore not that IFRS 9 automatically improves transparency and stability. Rather, the evidence suggests a more precise mechanism: IFRS 9 improves the visibility and timeliness of credit-risk recognition, while the prudential and performance consequences remain conditional on bank-specific characteristics and macroeconomic shocks.

### 5.5 Summary of hypothesis assessment

***Table 10. Revised summary of hypothesis assessment***

| Hypothesis | Statement | Evidence | Status |
|---|---|---|---|
| H1 | IFRS 9 adoption is associated with improved informational transparency in Moroccan banks. | NPL and stage-level ECL information become more available and granular after 2018. Coverage ratio does not rise homogeneously and is affected by denominator mechanics. | Partially supported |
| H2 | IFRS 9 adoption is associated with greater responsiveness of credit-risk recognition. | ECL and Stage 2 indicators react visibly in 2020; cost-of-risk evidence is heterogeneous and not uniformly robust across banks. | Partially supported |

***Source: Authors' synthesis based on Sections 4.1-4.5.***

### 5.6 Limitations and implications for interpretation

Several limitations remain. First, the sample is intentionally restricted to the five Moroccan banks listed on the Casablanca Stock Exchange. This restriction is justified by the need for audited, public, comparable and traceable financial statements, but it limits statistical power and generalisability to non-listed banks.
Second, all sample banks adopted IFRS 9 in 2018. Empirical design therefore cannot rely on staggered adoption or on a credible untreated control group. The IFRS 9 dummy may capture other post-2018 developments, including regulatory changes, the COVID-19 shock, post-pandemic recovery and bank-specific strategic adjustments.
Third, some indicators are affected by changes in accounting classification between IAS 39 and IFRS 9. This is particularly relevant for ECL, Stage 3 exposures, NPL recognition and the coverage ratio. These variables are not treated as interchangeable measures of financial stability; they are interpreted according to distinct analytical dimensions: informational transparency, accounting recognition and prudential-performance outcomes.
Despite these limitations, the results offer a valuable contribution because they are built on manually verified bank-level data and because the discussion explicitly separates descriptive evidence, statistical association and theoretical interpretation. The findings support a cautious view of IFRS 9 adoption in Morocco: it improves the visibility and responsiveness of credit-risk reporting, but its prudential and performance consequences are heterogeneous, mechanically complex and sensitive to macroeconomic conditions.

## 6. Conclusion and Recommendations

This article provides a contextualised empirical contribution to the literature on IFRS 9 adoption in emerging banking systems by examining five Moroccan listed banks over the period 2014–2025. Rather than treating IFRS 9 adoption as a uniform accounting shock, the study shows that its post-adoption patterns are differentiated across banks, indicators and periods. The evidence suggests that IFRS 9 primarily strengthened the informational visibility of credit risk through more granular NPL and ECL disclosures, while its association with prudential

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indicators and profitability remains heterogeneous and sensitive to bank-specific characteristics and macroeconomic shocks.

The main contribution of the article is threefold. First, it contributes to the IFRS 9 literature by providing verified longitudinal bank-level evidence from Morocco, a context that remains underdocumented in comparison with European, Gulf and broader international banking studies. Second, it contributes methodologically by relying on hand-extracted figures from published financial statements rather than estimated or reconstructed data. Third, it contributes conceptually by distinguishing between three dimensions that are often conflated in the IFRS 9 debate: informational transparency, accounting recognition of credit risk and prudential-performance outcomes.

The findings nuance the assumption that IFRS 9 automatically improves all banking indicators after adoption. The standard appears to improve the visibility and granularity of credit-risk information, which supports the informational logic derived from agency theory. However, this improvement in disclosure does not necessarily translate into a homogeneous rise in the headline coverage ratio or into a uniform improvement in profitability and financial stability. The observed heterogeneity across banks also suggests that the institutional adoption of an international standard does not produce identical outcomes across institutions, but interacts with business models, portfolio structures, data quality and supervisory practices.

The interpretation of the coverage ratio is one of the main analytical insights of the study. A stable or declining coverage ratio after IFRS 9 should not be read mechanically as evidence of weaker provisioning. Since the ratio depends on both provisions and recognised non-performing exposures, broader NPL recognition under IFRS 9 can increase the denominator and mechanically reduce the ratio, even when provisioning increases. This finding is particularly relevant for regulators and analysts, because it shows that post-IFRS 9 prudential indicators require a more careful reading than simple before-and-after comparisons allow.

The conclusions of the study must nevertheless be interpreted with caution. The sample is intentionally restricted to five Moroccan banks listed on the Casablanca Stock Exchange, because these institutions provide the public, audited and comparable information required for a traceable extraction protocol. This choice strengthens data reliability but limits the statistical power of the analysis and the generalisability of the findings to non-listed banks or to the entire Moroccan banking sector. In addition, all banks adopted IFRS 9 at the same time, which prevents the construction of a strong external control group. The COVID-19 shock and the post-pandemic recovery period also overlap with the IFRS 9 post-adoption window, making it necessary to interpret the results as contextualised associations rather than definitive causal effects.

### *Practical Recommendations*

For regulators and supervisory authorities, particularly Bank Al-Maghrib, the findings suggest the need to strengthen the comparability of post-IFRS 9 credit-risk disclosures. This could be achieved by encouraging banks to disclose, in a more standardised manner, the definitions used for NPLs, the denominator of the coverage ratio, the reconciliation between accounting impairments and prudential provisioning indicators, and the assumptions underlying ECL measurement.

A second recommendation concerns ECL modelling transparency. Banks could be encouraged to disclose more detailed information on the main parameters used in ECL estimation, especially probability of default, loss given default and exposure at default by portfolio segment, when confidentiality and prudential constraints allow it. Such disclosures would improve the ability of researchers, investors and supervisors to distinguish between genuine deterioration in credit quality and changes resulting from model assumptions or classification conventions.

A third recommendation concerns stage migration disclosures. The study shows that published financial statements generally provide year-end stocks by stage, but not the flows of exposures between Stage 1, Stage 2 and Stage 3. More systematic disclosure of stage migration flows would make it possible to better assess the early-warning function of IFRS 9 and to identify whether increases in Stage 2 exposures anticipate future Stage 3 deterioration.

A fourth recommendation relates to financial communication. Banks should clarify the interpretation of key credit-risk indicators in their annual reports, especially when changes in coverage ratios, NPL ratios or cost of risk are driven by classification effects, denominator effects, macroeconomic shocks or changes in provisioning models. This would reduce the risk of misinterpreting improved transparency as either automatic prudential improvement or, conversely, as deterioration in risk management.

***Future Research Directions***

Future research could extend this study in several directions. First, the analysis could be expanded to include non-listed Moroccan banks, provided that comparable and reliable data become available. This would make it possible to assess whether the patterns observed among listed banks also apply to the broader banking sector.

Second, comparative research across the Maghreb, MENA region or African banking systems would help determine whether the Moroccan experience is specific to its institutional and supervisory context or whether similar IFRS 9 dynamics can be observed in other emerging economies.

Third, future studies could mobilise confidential or supervisory data, where accessible, in order to analyse the internal parameters of ECL models, including PD, LGD and EAD. Such data would allow a more precise assessment of the mechanisms through which IFRS 9 affects provisioning behaviour and credit-risk recognition.

Fourth, further research could examine the relationship between IFRS 9 and regulatory capital. Since ECL provisions may affect equity, capital adequacy and transitional prudential adjustments, a closer analysis of the link between accounting impairment and regulatory solvency would enrich the understanding of IFRS 9's prudential implications.

Fifth, future work could study the effect of IFRS 9 on bank lending behaviour. This would make it possible to determine whether forward-looking provisioning affects credit supply, loan pricing or risk appetite, particularly during periods of macroeconomic stress.

Finally, more advanced empirical designs could be used to test the procyclicality of IFRS 9 in emerging markets. Longer time series, cross-country samples and dynamic panel models would help distinguish between the standard's intended early-recognition mechanism and the possibility that ECL models amplify credit-cycle fluctuations during downturns.

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