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The relationship between the accounting standards and the global financial crisis: empirical analysis of mergers and acquisitions in banking industry

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Abstract

Purpose – The purpose of this study is to focus on, namely, the international financial reporting standards (IFRS) or local generally accepted accounting principles (GAAP) effects of financial reporting as a corporate governance mechanism on mergers and acquisitions (M&As) for banking institutions during the global financial crisis.

Design/methodology/approach – I investigate the characteristics of bank financial statements before the start of the global crisis, which helps to explain the relationships between the accounting standards and the global financial crisis. The observations, which are based on 3,178 deals in a sample period, are crucially important for corporate governance and bank performance. The results from our analysis are robust to a wide variety of modifications in our research design and are corroborated by descriptive statistics, one-way ANOVA and a two-sample *t*-test on a sample of banks that voluntarily adopted IFRS for M&As.

Findings – The find that IFRS-based monitoring of banks M&As in terms of higher quality financial reporting is negatively linked with bank performance, whereas local GAAP-based monitoring of banks' M&A is positively associated with accounting performance. Finally, our main results for higher quality financial reporting under local GAAP or IFRS generally hold after controlling for various analyses and relationships between account standards and the financial crisis.

Practical implications – Financial reporting standards setting a corporate governance mechanism are considered since it was impacted recently during the global financial crisis and became a great matter of concern.

Originality/value – The value of this paper is determined by an empirical investigation of the relationships between bank performance and accounting and financial reporting standards in the context of the global economy.

Keywords Financial crisis, International financial reporting standards, Bank merger performance

Paper type Research paper

1. Introduction

Corporate failures such as Enron, Parmalat and Worldcom have highlighted issues concerning the deficiencies in financial reporting standards. In addition, Kirkpatrick (2009)

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suggests that the credit rating process and financial reporting standards have also supported worse corporate governance outcomes in the banking industry. As such, these financial firms partly trigger the financial crisis because of their governance failures (Adams, 2012). Because of the important role of banking firms in the financial crisis, I focus the analysis on the effects of financial reporting standards by banking firms.

The global financial crisis of 2007–2008 has drawn attention to the role of financial reporting in periods of economic downturns. The analysis of the global financial crisis revealed that usually many commentators tend to blame financial reporting for causing the financial crisis, in particular, blaming the fair value measurement approach for financial instruments' reporting (Pinnuck, 2012) in the financial statements of banking firms. While the macroeconomic factors that are at the origins of the global financial crisis of 2007–2008 affected in all sector firms (Taylor, 2009), some firms including banks, financial intuitions and insurance companies were extensively affected much more than those in other sectors (Erkens, Hung, & Matos, 2012).

Jiraporn, Kim, Kim, and Kitsabunnarat (2012) investigated the impact of financial reporting quality related to corporate governance on IFRS adoption during the crisis. Hence, Mitton (2002) suggests that firms have significant relationships with higher disclosure quality, a better ownership, obtaining greater transparency and stronger board structure during the global financial crisis. According to Akgün (2022), IFRS provides better accounting information, comparability of financial statements, comprehensive with disclosure requirements and thus decreases information asymmetry. Therefore, IFRS improves higher-quality information than local GAAP. In line with a prior study by Francis, Huang, and Khurana (2016), empirical results suggest that IFRS has an important role of accounting standards in determining cross-border M&A.

In this context, Thelisson and Meier (2022) suggest that post-merger is an important process because it is during this stage that value is created by alternative crucial innovation by adopting new business and organizational practices. In line with a prior study by Alvarez-Gonzalez and Otero-Neira (2020), they found that M&A activity has a negative impact on prices and the nearness of the bank branches, while it has a positive impact on products and services offered during the post-M&A. In addition, the M&A activity has a long story, which was required by the global financial crisis that started in the USA and European countries in 2008 (Mensah, Madichie, Mensah, & Awini, 2022). Likewise, this study uses firm-level data from the crisis economies of the world, especially during the time of the 2007–2008 crisis, to analyse the relationship between accounting standards and the financial crisis in terms of banking performance for M&As.

Akgün (2022) examined the financial performance of merged banks in European countries where the target and acquirer banks used the IFRS or local GAAP to examine the financial performance of European banks not engaged in M&A activity. The empirical evidence results show that local GAAP reporting provides more useful information to executive bank managers and investors in this setting than IFRS. Different from Akgün (2022), who examined the impact of IFRS or local GAAP on financial reporting on M&A for banks during the global financial crisis by using and extending the dataset. In contrast to the literature focusing on non-financial firms and the literature on the relationship between accounting standards and financial crises, the evidence from banking M&As is very limited. The only three studies comparable to ours on IFRS and the financial crisis are Abu Alrub *et al.* (2020), Barth and Landsman (2010) and Olsen and Weirich (2010), although they do not cover banking M&As. This study is important for these gaps, motivation and the contribution.

It simply says that my paper is different from existing literature (i.e. Abu Alrub *et al.*, 2020; Akgün, 2022) because it examines the financial statements of targets and bidding banks from 33 countries that were reported under IFRS and local GAAP during the financial crisis. The objectives of this study are to first perform an analysis of the impact of the financial crisis

with the adoption of IFRS and to what extent these crises influence banks' performance in the global economy context, while Akgün (2022) focuses only on the European countries context. In addition, Abu Alrub *et al.* (2020) examine the impact of the IFRS application on Lebanese bank performance, and how the improvement in accounting standards might develop or prolong the effect of the financial crisis; thus, their studies focus on one country and not cover the M&A sample. Second, my paper presents a very relevant research question, on which there is a dearth of studies focusing on banks and, more specifically, M&As: how the impact of accounting standards on global financial crisis. To that end, the paper uses a very comprehensive literature. Third, an empirical comprehensive analysis of IFRS adoption and local GAAP in the M&As is conducted during the 2008 financial crisis.

The first research question addresses the effects of banking M&As during the post-mandatory IFRS adoption period between the beginning of the 2008 financial crisis and after the 2008 financial crisis. Also, the first research question investigates the impacts of capital structures, asset structures, cost-efficiency and profitability on the performance of the banking industry. The second research question studied whether the bidder banks that acquire a target with accounting standards differ from those banks that were not involved in banking M&As banks during the global financial crisis.

Therefore, the main contribution of this paper is to empirically provide evidence for the determination of the argument regarding whether the global financial crisis had any impact on the performance of the banking industry under the accounting standards. In addition, I examine the target bank financial statements reported under the local GAAP and IFRS. This research explores the difference between the outcomes of bidders and targets during the financial crisis of 2007–2008. Similarly, unlike studies that focus on a limited number of countries, our sample covers banks from 33 countries. The main results for higher quality financial reporting under local GAAP or IFRS generally hold after controlling for various analyses and relationships between accounting standards and the financial crisis. Hence, based on panel analysis of 3,178 bank observations in 33 countries over the period 2003–2012, I find that bank M&A activities are positive contribution to associate with bank performance, while IFRS shows a positive relationship between the impact of corporate governance and accounting performance. Finally, this study contributes to the stream of empirical analysis that attempts to resolve the impacts of the IFRS and US GAAP on the post-merger banking performance during the global financial crisis. Overall, this study contributes to add the stream of empirical analysis that attempts to resolve the impacts of the accounting standards settings during the global financial crisis, particularly, M&A in the world economy context.

The remainder of this paper is structured as follows. Section 2 on offers a summary of the relevant strands of the extant literature and hypothesis development. Section 3 outlines the research design and data sample. Section 4 describes the empirical results and analysis. A discussion and conclusions are given in Section 5.

2. Literature review and hypotheses development

While some studies investigate the quality change resulting from the switch in accounting standard adoption from the local GAAP to IFRS (Karamanou & Vafeas, 2005; Daske & Gebhardt, 2006), several others explore the market outcomes of mandatory IFRS adoption (Daske, Hail, Leuz, & Verdi, 2008). However, few studies focus on accounting standards and the 2007 financial crisis (Olsen & Weirich, 2010) in the banking industry for M&A. One argument suggests that IFRS provides enhanced comparability of financial statements across markets and thus improves the usefulness of information in terms of financial information users. Therefore, IFRS leads to higher quality financial reporting across national accounting standards (Akgün, 2022; Barth *et al.*, 2008, 2012) since it enhances the

comparability and the transparency of financial reporting around the world (Armstrong, Barth, Jagolinzer, & Riedl, 2010).

Although IFRS adoption suggests that it has a high-quality set of financial reporting standards, the economic consequences of this setting are still being debated. For example, IFRS provides an increase in accounting quality in European countries Lopez, Schuldt, and Vega (2022) and also an opportunity to improve the practices of financial reporting (Wilde, 2010). Hence, Ahmed, Neel, and Wang (2013) advocated that IFRS adoption may benefit a firm's information environment through its effects on internal and external information users via financial statements. However, even if all countries switch to mandatory IFRS, they could make other changes to the financial reporting system. According to Christensen, Hail, and Leuz (2013), these changes could be associated with the strength of countries' institutional and legal systems.

In this case, IFRS adoption could be part of a broader set of changes (Daske, Hail, Leuz, & Verdi, 2013). Furthermore, even if IFRS were used in a country, the company's reporting process would continue to be greatly influenced by its primarily local contributing institutional factors, including taxation, laws and financing (Ball, 2006). In this context, countries' local political and economic forces may also work against individual national standard setters, thus eliminating the perceived advantages of IFRS.

To summarize, IFRS adoption provides better quality outcomes for financial reporting and useful information for users. However, IFRS adoption does not guarantee improved reporting quality and does not improve domestic financial reporting standards, which is consistent with Ball, Robin, and Wu (2003) and Ding, Hope, Jeanjean, and Stolowy (2007). Even if it eliminates the differences in accounting standards to improve the comparable financial information in the financial statement after the IFRS's adoption, the impact of differences on the disclosure continues to play an important role because of the environmental, economic, cultural and institutional regulatory differences among the countries.

In this context, we can more precisely identify how regulation may have affected financial reporting practices' choices during the global financial crisis (Bischof, Bruggeman, & Daske, 2011). Hail, Leuz, and Wysocki (2010) imply that the global financial crisis can lead certain countries to adopt their own version of IFRS. Mala and Chand (2012) show that the global financial crisis did not postpone the trend towards accounting convergence. Additionally, Lopes (2016) evidence findings suggest that the influence of the use of IFRSs (versus local GAAP) has an important role in the moderation of the influence of national culture on loan loss provisions. Similarly, Gebhardt and Novotny-Farkas (2011) suggest that IFRS adoption is significantly affect less pronounced in stricter supervisory regimes in the banking industry. In contrast, Saidu and Dauda (2014) found that the financial crisis is significantly influencing on IFRS in Nigerian banks.

Additionally, as far as financial reporting transparency also provides information including future cash flows, possibly diminishing the sensitivity of liquidity to crisis. Thus, transparency effects may have been especially pronounced during crisis periods. Prior studies suggest that IFRS are crucially important in environments with stronger overall enforcement and investor protection. Lang and Maffett (2011) imply that the effects of transparency on liquidity are significantly more important during the financial crisis. Godlewski (2014) found that banks were fundamentally changed in the behaviours of lending loans during the 2007–2008 crisis. Similarly, Lin, Jiang, Tang, and He (2014) suggest that accounting quality may play a more obvious role in liquidity, and their evidence finds that firms that provided high-quality financial information were less negatively impacted by the 2007 financial crisis.

The findings of Johnson, Boone, Breach, and Friedman (2000) suggest that the global financial crisis has emphasized the essential importance of effective corporate governance

through financial reporting practices. Ntim, Lindop, and Thoma (2013) showed a general trend towards increasing corporate risk disclosures over the periods before, during and after the global financial crisis.

The prior literature has also argued that accounting standards play an adverse role during a financial crisis. For example, Lin *et al.* (2014) imply that high-quality financial reporting applications are an important part of that overall economic frame. Thus, financial crisis is of crucial importance. Recently, the major argument has mainly focused on fair value accounting for the bank industry. Gebhardt and Novotny-Farkas (2011) suggest that fair value accounting is contributed to the crisis. However, overall, financial reporting regulation has also remained mostly unchanged during the financial crisis. Although financial reporting standards have gained value as a source of relevant information for economic decisions, they are not yet a tool of regulation (Ucieda & Gonzalo-Angulo, 2019). Additionally, financial globalization has increased M&A activities among the world's largest stock exchanges during the 2008 crisis. Similarly, Krivogorsky (2019) suggests that the financial crisis of 2008 had a severe impact on the development of financial markets, corporate financial stability and corporate governance application of the business.

Within this framework, I would expect there to be a favourable impact on banks' post-merger performance from local GAAP versus IFRS during the crisis. For example, Akgün (2021) found that local GAAP reporting allows a more transparent evaluation of bank performance based on traditional indicators, making it a superior tool for measuring potential acquisition targets. Similarly, Akgün (2019) found that IFRS-based monitoring of banks' M&As in terms of higher quality financial reporting is negatively linked with financial performance, while local GAAP-based monitoring of banks' M&A is positively linked with bank performance.

The global financial crisis that began through 2007–2008 caused the systemic collapse of many banks, including several high-profile institutions such as Lehman Brothers, Bear Stearns and Merrill Lynch, as consequence of poor governance of banks. Thus, because banks were at the centre of the global financial crisis, I also focus on the empirical analysis of the effects of financial reporting observed by Barth and Landsman (2010) for banking M&A events. Dunn, Intintoli, and McNutt (2015) empirical evidence results suggest that there are significantly negative effects on acquiring banks during the pre-financial crisis period. Overall, the banking industry has been particularly and significantly affected by the global financial crisis. Similarly, Akgün (2022) suggests that there is a significant relationship between local GAAP and post-merger performance, while IFRS does not contribute to post-merger performance in European banking. The findings of Rossi and Volpin (2004) suggest that there is a significant effect of better financial reporting standards on M&As. However, Bozos, Ratnaike, and Alsharairi (2014) find that a negative relationship between IFRS adoption and M&A premiums is stronger for mandatory adopters then for voluntary adopters, as well as that local GAAP is significantly different from IFRS.

The term M&A has focused on different meanings such as a merger refers to the fusion of two or more organizations into one and an acquisition is the purchase of one firm by another (Mensah *et al.*, 2022). According to Gersdorff and Bacon (2009), an M&A can be defined as a combination of two firms where the bidder usually pays a premium depending upon the synergies involved in the buying, selling and combining of companies.

Some empirical events on M&A activities suggest that they lead to new insights into M&A performance and indicate improvements in bank performance (Altunbaş & Marques Ibanez, 2008; Lin & Switzer, 2001; Switzer, 1996; Cornett & Tehranian, 1992), while there still seems to be no consensus on whether M&As improve business operating performance (Switzer, 1996; Andrade, Mitchell, & Stafford, 2001). For example, Moeller and Schlingemann (2005) and Knapp, Gart, and Chaudhry (2006) found a significant positive relationship between changes in operating performance and the acquirer's stock price reaction.

Additionally, Campa and Hernando's (2004) findings state that there are significant positive abnormal returns to the shareholders of the target firms and insignificantly negative returns to the shareholders of bidder firms around the M&A announcement period. In contrast, Ramaswamy and JWaegelein (2003) find that post-merger performance is negatively linked with the relative target size and is positively associated with long-term incentive compensation plans. In addition, Agrawal and Jaffe (2000) suggest that long-run performance is negative following mergers, while performance is non-negative following tender offers. However, Kumar's (2009) and Bao's (2017) findings show that the accounting-based performance does not significantly improve following the acquisition of sample firms.

King, Dalton, Daily, and Covin (2004) showed an insignificant effect on an acquiring firm's financial performance in the post-acquisition period. Similarly, Cerrato, Alessandri, and Depperu (2016) find that the financial crisis negatively affects the possibility of both cross-border acquisitions and diversification. Pre- and post-M&As have developed operating performance, including cost-efficiency and profitability (Gjirja, 2001). Cornett, McNutt, and Tehranian (2006) suggest that operating performance has increased in commercial banks after M&As. Sinha and Gupta (2011) suggest that profits before depreciation, interest, taxes and amortization have improved while the liquidity has reduced after M&As. Similarly, Lin, Hung, and Li (2006) showed that in the US banking sector, the firm's performance increased after M&As with respect to its productivity, profitability and shareholder's value.

Mensah *et al.* (2022) suggest that the global financial crisis has motivated a continuing and many-faceted debate concerning the actions that regulators can take to increase the stability of the financial system. Another key study by Acharya and Ryan (2016) found a positive relationship between current banks' financial reporting rules and operating performance during the financial crisis period. Generally, it seems that M&A activity in the banking industry during the financial crisis was different. For example, Beltratti and Paladino (2013) find that announcement returns are mainly explained by the acquirer bank industry characteristics, while achievement returns are primarily dependent on target opacity during the financial crisis period.

In sum, bank M&A activity is a more important event in this crucial sector of the global economy. The events in the global banking industry since 2007 have included common bank bailouts. M&A activity has significantly increased over the last three decades leading up to the start of the credit crisis in the summer of 2007. The increase in corporate deals in this sector began in the USA and European countries during the global financial crisis (Caiazza, Clare, & Pozzolo, 2012). Consequently, the financial crisis has crucially affected the corporate indicators of the banking industry around the world. During the global financial crisis, declaring an attempt to acquire another bank may be taken as a signal of financial liquidity and solvency (Beltratti & Paladino, 2013). Thus, the findings of Peni and Vahamaa (2012) suggest that good governance may have diminished the negative effect of the global financial crisis on firm performance. Beltratti and Stulz (2012) show stricter regulations to be linked with better bank industry performance during the financial crisis. Consequently, I believe that merged firms should perform better after they merge with banks that apply local GAAP because bidders had a good knowledge of their target during the financial crisis. Therefore, I tested the following hypotheses.

H1. The accounting performance of bidder banks that acquire a target with IFRS or local GAAP differ significantly from those banks not involved in M&A banks during the pre-and post-acquisition periods and financial crises.

H2. The accounting performance of bidder banks that acquire a target with IFRS or local GAAP does not differ significantly from those banks not involved in M&A banks during the pre- and post-acquisition periods and financial crises.

3. Research design

3.1 Sample selection

The sample data were obtained by combining two sources: Thomson One Banker M&As for data on the M&A activities and Bankscope for financial statements' data of the banks involved in M&A operations. It comprises M&A deals announced between 1/1/2002 and 31/12/2012 in which the acquirer is an EU bank, and the target is a bank operating in any country around the world. The initial M&A sample to 4,279 observations. Additionally, I exclude the bank information that has balance sheet information. I also eliminate negative values such as total net loan, deposit and capital (negative capital might bankruptcy distress) because they will bias the estimated regression coefficients for analysis. Hence, the final one contains 3,178 deals for which full accounting information of the participating banks is available.

Several financial variables and ratios were sourced from the EU, Western European and American companies over the period 2003 to 2012. This resulted in a full sample of 11,044 firm years from the North American (the USA and Canada), the European Union (EU)-28 and Western European (Norway, Switzerland and Turkey) samples. The sample included listed/unlisted banking companies. The sample period is made up of 10 reporting periods of financial statement information prepared according to each country's own local GAAP or IFRS between 2003 and 2012. This period is chosen because it is the period between the approval of the international accounting standards by the European Communicates (19 July 2002) and when all the firms started to fulfil the requirements of this regulation in 2005. More importantly, I consider the differences in the business cycle among countries and the fact that the post-mandatory adoption period (2005–2012) was heavily marked by the global financial crisis.

3.2 Methodology

The present study combines previous methodologies to investigate the impacts of accounting standards on global financial crisis evidence from North America, the EU-28 and Western Europe. This paper examines the banking performance in terms of accounting standards following announcements of M&As during the financial crisis. Given the pivotal role of banks in modern economies, measuring banking performance has become an important issue in banking M&A activities. In addition, I examine 33 countries that adopted IFRS and find decreasing M&As for banking institutes in non-IFRS countries during the post-IFRS.

This section of this study explains the methodology used to estimate the impacts of improvements in accounting standards on bank performance regarding the 2008 financial crisis. In this study, panel method analysis was used with observation of each country-listed bank to control the endogeneity of bank performance, which was conducted by Abu Alrub *et al.* (2020). I think that the M&As provide an example of different opportunities, especially with respect to performance-related issues and strategic achievements that currently impact firm size, capital structure, cost-efficiency and profitability for the banking industry. I measured corporate accounting performance around bank mergers with differences in pre- and post-IFRS adoption and 2007 financial crisis of banks are tested using the *t*-statistic conducted by Cornett *et al.* (2006), Hagendorff and Keasey (2009) and Akgün (2022). Also, I used a Bartlett's test to determine the possible financial variables that impact bank performance. In this analysis, based on Akgün (2022) method, we assess and examine banking industry performance in the global economy context using several alternative financial ratios, namely, capital structure, asset quality, cost-efficiency and profitability indicators. This study also uses a diversity of ways to investigate the relationship between bank performance proxies in the pre- and post-deal period. I also use a robust one-way ANOVA test. By conducting ANOVA tests, I thus compare performance measures for banks involved in M&A operations, performance measures for target and acquirer in the pre-M&A

period, banks not involved in any M&A operations and performance values post-merger for merged banks resulting from the M&As deal (Beccalli & Frantz, 2009).

Following the empirical evidence, therefore, I use several financial ratios to determine accounting standards and financial crises around the world. Especially, I used four bank performance indicators such as capital structure (ETA = equity to total assets); asset quality (SIZE = log total assets, NLTA = net loans to total assets, NLCSTF = net loans to deposits and LACSTF = liquid assets to total deposits); cost-efficiency (CIR = cost to income ratio and NIEXPA = non-interest expense to average total assets); and profitability (NIM = net interest margin, ROA = return on assets, ROE = return on equity and OOPINCA = other operating income to average total assets).

I use the ratio of ETA as a capital structure proxy to measure of bank credit risk. ETA is the ratio of total assets financed by shareholders, which shows the bankruptcy risk in the banking firms (Huian, 2012). Brissimis, Delis, and Papanikolaou (2008) found that the impact of bank credit risk on bank performance is a negative association, indicating that bank capital increases bank credit risk. In contrast, Akgün (2022) found that ETA has a positive signal for both IFRS and local GAAP groups of merged banks.

According to Bernstein (1996), asset quality affects both the level of bank costs and estimates of scale economies in banking. Some prior studies find a positive relationship between past performance and changes in firm SIZE (Heaney, Naughton, Truong, Davidson, Fry, & McKenzie, 2007; Molyneux, Schaeck, & Zhou, 2010), while others find a negative relationship (Pasiouras & Kosmidou, 2007). The SIZE proxy is the natural log of the bank's total assets. Bank SIZE may impact the relationship between capital, bank risk and efficiency in line with the prior study of Altunbaş, Carbo, Gardener, and Molyneux (2007). Bank SIZE is a critical determinant of its performance because a large size bank may enjoy economies of scale that reduce the cost of collecting and processing information. It is an important factor, therefore, that drives the differences in efficiency across banks, which we find through the negative and statistically significant effect for the control group banks. This finding is consistent with those of previous studies conducted in European countries (Akgün, 2022; Altunbaş, Carbo, Gardener, & Molyneux, 2007; Chortareas, Girardone, & Ventouri, 2012).

According to Altunbaş *et al.* (2007), NLTA can indicate rapid loan growth, which may increase risk and negatively impact capital and bank operating efficiency. Akgün (2022) found that the relationship between NLTA and ROE are smaller for local GAAP users than for the IFRS sample compared to banks not involved in M&A. Additionally, Akgün (2022)'s results of the mean of the NLTA have a positive and significant signal for both groups of merged banks, showing that increasing the efficiency of the European banking industry.

I use the net loans to deposits ratio as a proxy for the asset structure. Another banking risk proxy used is the loans to deposit ratio (NLCSTF), as banks with a higher ratio are commonly viewed as riskier (Akgün, 2022; Altunbaş *et al.*, 2007). Akgün (2022) found that the means of the financial performance indicators in merged banks are smaller for local GAAP banks compared to IFRS banks for NLCSTF in European banking. Finally, I use the liquid assets divided by deposits ratio (LACSTF) as an asset structure variable, as in Altunbaş *et al.* (2007), banks that have more liquid assets may be more efficient and need less capital. Akgün (2022) found that merged local GAAP reporting banks are smaller than IFRS banks in terms of LACSTF.

The cost-efficiency indicator is affected by quantities, prices of inputs and outputs used in the production process and organizational and managerial banking structures (Fiordelisi, 2009). I used two ratios to measure efficiency: bank efficiency ratio (CIR) and the non-interest expenses to average assets ratio (NIEXPA). CIR calculate as total operating expenses divided by total operating income. Chortareas *et al.* (2012) find that CIR has a statistically insignificant negative relationship with the liquidity variable, while Brissimis *et al.* (2008) show that a positive impact on bank efficiency. Akgün (2022) found that the mean of NIEXPA and ROE

are smaller for local GAAP reporters than for merged banks in which both the acquirer and target bank use IFRS and banks not involved in M&A.

Traditionally, NIM, ROA and ROE are three basic ratios that are used to measure the profitability of banks. In part, NIM indicators evaluate the size of the spread between interest revenue and interest costs that management has been able to achieve by close control over a bank's firms earning assets and the pursuit of the cheapest of funding. ROA shows the capability of the bank's management to convert the institution's assets into net earnings. ROE estimates the net income that the shareholders have generated from investing their capital in the bank industry (Rose & Hudgins, 2005). For example, some studies examine the bank merger performance and find no contribution to merger-related profitability improvements as traditionally measured by ROA (Houston, Kames, & Ryngaert, 2001; DeLong, 2003) and ROE (Altunbaş & Marques Ibanez, 2008). I also use operating income to assets as a profitability calculation as other operating income divided by total assets (OOPINCA) as in Akgün (2022). All these indicators are listed in Appendix A.

3.3 Descriptive statistics

The descriptive statistics for bank M&As in Table 1 illustrate the comparison between financial numbers of adopters reported under the merged-local GAAP group and the merged-IFRS group during the post-mandatory IFRS adoption period between the beginning of the 2008 financial crisis and after the 2008 financial crisis. Especially, our result shows that while assets quality such as ETA, SIZE and Loan Loss Reserve to Gross Loans (LLRL) mean of non-merged banks are higher in the post-mandatory IFRS adoption period of 2005 and after the financial crisis 2008, the NLTA, NLCSTF and LACSTF mean of non-merged banks are lower. Likewise, in Table 1, in the post-mandatory IFRS adoption period from 2005 to the 2008 financial crisis, the LLRL means as assets quality measures of non-merged banks are higher than non-merged banks.

4. Empirical results

If the adoption of an accounting standard with IFRS, I compare it with local GAAP and the effects of these standards within the financial crisis. This, compared in Tables 1–4, is divided into pre-IFRS adoption, post-IFRS adoption, post-IFRS adoption and pre-2008 financial crisis and post-IFRS adoption and post-2008 financial crisis. In this context, Table 2 shows that two-sample *t*-test equal variances in the pre- and post-mandatory adoption period difference between the merged-local GAAP group and merged IFRS group banks. Statistically, I tested for the merged-local GAAP group and merged IFRS group using the *t*-statistic test. Especially, the results represent that all examined items are statistically different between two groups at the 1% level, except for pre-mandatory period; NIEXPA and OOPINCA no significant differences between two groups, while for post-mandatory period; and CIR and NLCSTF also displays no significant difference between two groups.

Compared to the accounting standards reported, the use of local GAAP groups in the pre- and post-mandatory adoption period has a greater extent operating performance than do IFRS group bank. This is surprising that because the main purpose of the IFRS was to impose on all firms the need to enhance transparency and quality of financial reporting and analysis. Therefore, IFRS can induce cross-border M&A within the adopting countries by improving the comparability between potential bidders' and targets' financial reporting standards. However, we would say that because the sample merged banks generally unlisted firms and IFRS is mandatory for listed firms, the use of a bank's listing status can serve as a valid instrument to purge the results from as an identification instrument that our variables might impact to capture by finding local GAAP groups higher than IFRS groups. Moreover, this

Table 1. Descriptive statistics for bank M&A during the post-mandatory IFRS adoption period between the beginning of the 2008 financial crisis and after the 2008 crisis

Variables		Pre-mandatory adoption period: 2003–2004								Post-mandatory adoption period: 2005–2012							
		N	0	N	1	N	2	N	Total	N	0	N	1	N	2	N	Total
	ETA	18.843	12.133	105	7.081	200	11.300	19.148	12.097	29.647	12.601	191	9.335	232	10.830	30.070	12.567
			(15.47)		(5.59)		(7.60)		(15.37)		(16.11)		(14.87)		(4.07)		(16.05)
	SIZE	18.847	13.877	105	17.454	200	15.332	19.152	13.914	29.655	14.102	191	16.849	232	15.795	30.078	14.132
			(2.09)		(2.34)		(2.02)		(2.12)		(2.09)		(2.79)		(2.01)		(2.12)
Asset structure	LLRL	8.286	2.327	86	2.596	194	1.056	8.566	2.301	16.282	3.102	148	4.210	225	1.957	16.655	3.097
			(5.54)		(4.91)		(0.45)		(5.47)		(5.55)		(5.73)		(1.30)		(5.52)
	NLTA	17.938	59.214	105	54.804	200	64.310	18.243	59.244	28.071	58.591	187	50.145	232	63.224	28.490	58.574
			(24.30)		(26.70)		(16.51)		(24.25)		(24.00)		(25.27)		(14.17)		(23.96)
	NLCSTF	17.520	87.466	105	89.809	197	85.188	17.822	87.454	27.441	86.615	187	79.206	229	86.724	27.857	86.566
			(68.39)		(45.00)		(25.00)		(67.95)		(72.87)		(43.33)		(48.29)		(72.54)
	LACSTF	17.988	35.611	105	44.321	196	16.216	18.289	35.453	28.142	34.799	187	38.679	232	19.943	28.561	34.704
			(73.18)		(40.85)		(56.45)		(72.91)		(75.28)		(53.72)		(87.61)		(72.27)
Cost-efficiency	CIR	18.275	65.824	104	63.638	197	62.538	18.576	65.777	28.732	70.003	182	70.604	227	68.621	29.441	69.996
			(31.29)		(23.59)		(13.94)		(31.12)		(40.71)		(38.46)		(29.06)		(40.61)
	NIEXPA	18.492	4.055	105	2.265	197	3.132	18.794	4.036	29.228	4.108	185	2.556	232	3.753	29.645	4.096
			(8.22)		(1.50)		(1.74)		(8.16)		(9.09)		(1.78)		(2.10)		(8.04)
Profitability	NIM	18.412	2.735	105	1.817	200	3.378	18.717	2.737	29.079	2.479	185	1.665	232	3.360	29.496	2.481
			(2.72)		(1.13)		(1.06)		(2.70)		(2.85)		(0.91)		(1.19)		(2.83)
	ROA	18.600	1.067	105	0.964	200	1.076	18.905	1.067	29.336	0.485	185	0.158	232	0.412	29.753	0.482
			(2.83)		(1.54)		(0.70)		(2.81)		(2.75)		(1.33)		(1.41)		(2.74)
	ROE	18.591	9.072	105	11.827	200	11.890	18.896	9.118	29.320	3.912	185	0.873	232	3.785	29.737	3.892
			(12.39)		(12.11)		(12.29)		(12.39)		(15.82)		(22.44)		(18.11)		(15.89)
	OOPINCA	18.453	3.011	104	1.748	197	1.603	18.754	2.989	29.153	2.682	185	1.172	230	1.343	29.568	2.662
			(9.81)		(2.59)		(2.29)		(9.74)		(8.09)		(1.41)		(1.57)		(9.03)

Note(s): I consider two accounting adoption period such as pre-mandatory adaption period (2003–2004) and post-mandatory adaption (2005–2012). The table reports the results of the explanatory of banking firms' financial variables in the pre-mandatory period show beginning of the 2008 financial crisis, while post-mandatory period shows during and after 2008 crisis. Where 0 = non-merged banks, 1 = merged-between IFRS, 2 = merged-between local GAAP. The standard deviations are given in parentheses

Source(s): Processed data, 2023

Variables		Pre-mandatory adoption period 1	Pre-mandatory adoption period 2	Post-mandatory adoption period 1	Post-mandatory adoption period 2
Capital structure	ETA	7.014***	10.718***	8.535***	11.047***
		(0.916)	(0.299)	(0.709)	(0.287)
Asset structure	SIZE	17.559***	15.113***	17.064***	15.673***
		(0.460)	(0.158)	(0.154)	(0.097)
	NLTA	51.950***	63.377***	51.820***	63.727***
		(5.146)	(1.195)	(1.512)	(0.735)
	NLCSTF	74.752***	83.500***	83.019	86.014
		(7.480)	(1.891)	(2.583)	(1.901)
	LACSTF	48.875***	13.499***	40.708***	18.236***
		(10.493)	(3.227)	(2.895)	(3.620)
Cost-efficiency	CIR	69.946**	62.640**	68.071	65.795
		(3.791)	(1.086)	(2.007)	(1.139)
	NIEXPA	2.744	3.233	2.450	3.468
		(0.381)	(0.139)	(0.099)	(0.094)
Profitability	NIM	1.985***	3.508***	1.720***	3.368***
		(0.250)	(0.701)	(0.584)	(0.543)
	ROA	0.593***	1.060***	0.450***	0.720***
		(0.186)	(0.462)	(0.858)	(0.569)
	ROE	6.508***	10.911***	4.839***	7.537***
		(2.593)	(0.577)	(1.176)	(0.778)
	OOPINCA	1.698	1.639	1.379	1.463
		(0.444)	(0.164)	(0.114)	(0.094)

Note(s): The table reports the results of the explanatory of banking firms' financial variables in the pre- and post-mandatory period and standard errors are reported in parentheses. We consider two accounting adoption period such as pre-mandatory adaption period (2003–2004) and post-mandatory adaption (2005–2012). *, ** and *** significant at the 1%, 5% and 10% levels, respectively. The table reports the results of the explanatory of banking firms' financial variables in the pre-mandatory period show beginning of the 2008 financial crisis, while post-mandatory period shows during and after 2008 crisis. Where 1 = IFRS group, 2 = local GAAP group

Source(s): Processed data, 2023

Table 2. Two-sample *t*-test equal variances in the pre- and post-mandatory adoption period

situation can raise the possibility that the observed listed bank outcomes reflect at least in part enforcement changes with respect to financial reporting rather than the switch in the accounting standards. To some extent, because differences in accounting standards make it difficult to evaluate the bank performance of the targets, the bidders of a particular bank in a foreign country will be impacted by the extent to which local GAAP groups differ between the two countries.

The findings show that there is a significant difference between the two groups for ETA. For this test, mean of IFRS group is smaller than local GAAP group at a 1% level on both pre-mandatory adoption period and post-mandatory period. These results are consistent with Boumediene, Nafti, and Boumediene (2014), which suggest that there is a significant and positive relationship between the two groups of ETA and yield in the French context before the crises, showing the impact of accounting standards after the adoption of IFRS since 2005.

The result shows that there is a significant difference between the two groups for SIZE. For this test, the mean of the local GAAP group was smaller than that of the merged IFRS group at a 1% level in both pre-mandatory the pre- and post-mandatory adoption periods. This result is inconsistent with Moeller, Schlingemann, and Stulz's (2004) finding that there is no evidence that the SIZE effect is generally reversed for acquisition premiums. Additionally, the coefficients of SIZE as an asset structure variable are significant and positive at the 1 %

Variables		Pre-mandatory adoption period non-M&A 1	Pre-mandatory adoption period non-M&A 2	Pre-mandatory adoption period M&A 1	Pre-mandatory adoption period M&A 2	Post-mandatory adoption period non-M&A 1	Post-mandatory adoption period non-M&A 2	Post-mandatory adoption period M&A 1	Post-mandatory adoption period M&A 2
Capital structure	ETA	−4.801	−1.097	3.705		−3.884	−1.372	2.512	
		(0.390)	(1.000)	(0.831)		(0.000)	(0.216)	(0.105)	
Asset structure	SIZE	3.810***	1.364***	−2.446***		3.049***	1.659***	−1.390***	
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	
	NLTA	−5.701	5.726	11.427		−7.014	4.892	11.906	
		(0.796)	(0.015)	(0.113)		(0.000)	(0.000)	(0.000)	
	NLCTF	−4.815	3.933	8.748		−3.927	−0.932	2.995	
		(1.000)	(1.000)	(1.000)		(1.000)	(1.000)	(1.000)	
	LACSTF	16.037**	−19.338**	−35.376**		5.593***	−16.879***	−22.472***	
		(0.723)	(0.001)	(0.048)		(0.600)	(0.000)	(0.000)	
Cost-efficiency	CIR	2.293	−5.012	−7.306		−0.308	−2.584	−2.276	
		(1.000)	(0.166)	(0.897)		(1.000)	(0.466)	(1.000)	
	NIEXPA	−1.369	−0.881	0.488		−1.637	−0.620	1.017	
		(1.000)	(0.418)	(1.000)		(0.002)	(0.342)	(0.290)	
Profitability	NIM	−0.861**	0.661**	1.522**		−0.859***	0.790***	1.640***	
		(0.339)	(0.007)	(0.027)		(0.000)	(0.000)	(0.000)	
	ROA	−0.293	0.174	0.467		−0.261	0.009	0.270	
		(1.000)	(1.000)	(1.000)		(0.332)	(1.000)	(0.603)	
	ROE	−1.550	2.854	4.403		−1.075	1.623	2.698	
		(1.000)	(0.031)	(0.421)		(0.657)	(0.007)	(0.050)	
	OOPINCA	−1.056	−1.114	−0.059		−1.431	−1.346	0.084	
		(1.000)	(0.302)	(1.000)		(0.028)	(0.000)	(1.000)	

Note(s): The table reports the results of the explanatory of banking firms' financial variables in the pre- and post-mandatory period and standard errors are reported in parentheses. We consider two accounting adoption period such as pre-mandatory adaption period (2003–2004) and post-mandatory adaption (2005–2012). *, ** and *** significant at the 1%, 5% and 10% levels, respectively. Where 1 = IFRS group, 2 = local GAAP group
Source(s): Processed data, 2023

Table 3.
One-way ANOVA-comparing three groups in the pre- and post-mandatory adoption period

level, indicating that large bank firms are better able to overcome the 2008 financial crisis for the post-mandatory adoption period. The finding shows that NLTA, NLCSTF and LACSTF have a significant and positive impact on accounting standards during the financial crisis at the 1% level for pre- and post-mandatory adoption periods. These results are consistent with Akgün (2022), which suggested improving operating efficiency in the bank industry.

In addition, I find that there is a significant difference between two groups such as NIM, ROA and ROE. Specifically, results indicate that the mean of the local GAAP group is larger than that of the merged IFRS group at a 1% level on both pre-mandatory the pre- and post-mandatory adoption periods. This result is consistent with Hagendorff and Nieto (2013), which suggest that the target's profitability is significantly positively linked with post-merger performance. The findings suggest that the coefficients of profitability variables are all significant and positive at the 1% level, except for OOPINCA, which is not significant, suggesting that bank firms with merged-local GAAP were less affected by the crisis than the merged-IFRS group.

The two-sample *t*-test in Table 2 also shows that the improvement in the profitability ratios (NIM, ROA and ROE) of the banks is statistically significant in the pre-mandatory adoption period compared with the post-mandatory adoption period, but the improvement in the OOPINCA ratio is not statistically validated. Hence, null hypotheses H2 is rejected, and H1 is accepted. These results suggest that the M&A and financial crisis had a significant impact on NIM, ROA and ROE ratios but an insignificant impact on the OOPINCA ratio in both pre- and post-mandatory adoption period, which is consistent with Adhikari, Kavanagh, and

Table 4. One-way ANOVA – comparing three groups in the post-mandatory adoption period and at the beginning of the 2008 financial crisis and after the 2008 financial crisis

		Post-mandatory adoption period and before the 2008 financial crisis				Post-mandatory adoption period and after the 2008 financial crisis			
		non-M&A		M&A		non-M&A		M&A	
Variables		1	2	1	2	1	2	1	2
Capital structure	ETA	−5.052***	−0.834		4.219*	−3.267**	−1.771		1.495
		(0.002)	(1.000)		(0.068)	(0.015)	(0.282)		(1.000)
Asset structure	SIZE	3.577***	1.654***		−1.922***	2.747***	1.694***		−1.054***
		(0.000)	(0.000)		(0.000)	(0.000)	(0.000)		(0.000)
	NLTA	−4.410	5.096***		9.506***	−8.447***	4.633***		13.079***
		(0.189)	(0.009)		(0.003)	(0.000)	(0.010)		(0.000)
	NLCTF	2.344	−2.278		−4.622	−7.408	0.110		7.518
		(1.000)	(1.000)		(1.000)	(0.492)	(1.000)		(0.879)
	LACSTF	8.711	19.395***		−28.105***	3.880	−14.856***		−18.736**
		(0.666)	(0.001)		(0.004)	(1.000)	(0.008)		(0.034)
Cost-efficiency	CIR	−2.816	−3.286		−1.100	0.601	−1.383		−1.983
		(1.000)	(0.421)		(1.000)	(1.000)	(1.000)		(1.000)
	NIEXPA	−1.790	−0.923		0.867	−1.552	−0.355		1.197
		(0.075)	(0.342)		(1.000)	(0.027)	(1.000)		(0.393)
Profitability	NIM	−0.918***	0.642***		1.561***	−0.815***	0.881***		1,696***
		(0.002)	(0.002)		(0.000)	(0.000)	(0.000)		(0.000)
	ROA	−0.104	0.009		0.112	−0.327	−0.072		0.254
		(1.000)	(1.000)		(1.000)	(0.316)	(1.000)		(1.000)
	ROE	2.755	2.817		0.063	−3.039	−0.126		2.713
		(0.069)	(0.004)		(1.000)	(0.029)	(1.000)		(0.189)
	OOPINCA	−1.263	−1.408		−0.145	−1.510	−1.339		0.172
		(0.561)	(0.131)		(1.000)	(0.070)	(0.075)		(1.000)

Note(s): The table reports the results of the explanatory of banking firms' financial variables in the pre- and post-crisis period and standard errors are reported in parentheses. We consider two crisis period such as pre-crisis period (2003–2007) and crisis years (2008–2012). *, ** and *** significant at the 1%, 5% and 10% levels, respectively. Where 1 = IFRS group and 2 = local GAAP

Source(s): Processed data, 2023

Hampson (2023). Also, local GAAP groups in the pre- and post-mandatory adoption period to a greater extent profitability with ROE than do IFRS group banks, indicating that bank' management has used shareholders' funds suitably to generate more income. However, ROA decreased between the two groups in both the-and post-mandatory adoption periods, suggesting that bank management has used its assets inefficiently to generate profit, while NIM also decreased, which implies that interest income from the banks started to diminish in the post-mandatory adoption period.

Overall, Table 2 reports two-sample *t*-test equal variances for merged IFRS groups and their matched merged-local GAAP groups after the IFRS firms adopt IFRS. Although I did not conduct significance tests for differences in means between IFRS and local GAAP groups for pre-mandatory periods such as NIEXPA and OOPINCA, while for post-mandatory periods, CIR and NLCSTF also displayed no significant differences between the two groups, our findings suggest that differences exist for several of our samples. Perhaps more importantly, such mean differences that it is likely at least in part, to country differences and listed or unlisted firm's characteristics.

I also find that the mean of the merged local GAAP group is lower than that of the merged IFRS group at the 1% significance level, except for the ROA, ROE NLTA, NLCSTF and NIEXPA indicators. Before the financial crisis, in the post-mandatory IFRS adoption period 2005 and after the 2008 financial crisis, the merged IFRS group's banking performance decreased, but ETA and CIR are increased. In this context, the findings of Berger and DeYoung (1997) suggest a positive effect on CIR. Similarly, I find that in the post-mandatory IFRS adoption period 2005 and after the 2008 financial crisis, both the mean profitability of the merged local GAAP group and the merged IFRS group decreased. Furthermore, I find in the post-mandatory IFRS adoption period 2005 and after the 2008 financial crisis, the mean cost-efficiency of both the merged local GAAP group and the merged IFRS group at the 5% significance level increased in the M&A banking industry.

For our hypotheses to explain asset quality, such as the size effects for pre-and post-performance in the bank M&A. In Table 3, one-way variance analyses are similar to those of earlier studies. I found a significant difference between non-M&A and M&A banks. I also find that the mean of SIZE merged local GAAP group is smaller than the merged IFRS group at 1% level of significant both in pre-mandatory adoption period and post-mandatory adoption period for M&A bank industry. Recently, Moeller *et al.* (2004) found that acquiring firms for acquisitions of public firms is positive and significant for small firms but significantly negative for large firms. In contrast, Goodwin, Karman, and Heanly, 2009 found a negative relationship between IFRS adoption and firm SIZE. The finding of the negative coefficient suggests that the larger the SIZE of the M&A bank, the less will be the performance of the bank during the financial crisis. In contrast, the mean of SIZE for non-M&A had a significant and positive impact on accounting standards in the local GAAP group both in the pre- and post-mandatory adoption period, suggesting that improving bank performance. These results are consistent with O'Connell (2023).

Table 3 shows the one-way ANOVA-comparing three groups in the pre- and post-mandatory adoption period difference between the merged-local GAAP group and the merged IFRS group banks. Using an approach that allows for investigation of accounting quality for bank performance based on target IFRS adoption, I focus on whether to distinguish among three groups of non-M&A group, IFRS group which target apply IFRS, local GAAP group which target apply national accounting standard. Then, a *t*-statistic test was used to identify the significant difference between the examined groups by selecting bank performance variables. Statistically, when I tested for one-way variance analysis, there was a significant difference between non-M&A and M&A groups such as SIZE and LACSTF in asset quality. Moreover, for this test, mean of local GAAP group is smaller than the merged

IFRS group at a 1% level of significance both in the pre-mandatory adoption period and post-mandatory adoption period for M&A firms.

For one-way variance analysis, there is no significant difference between non-M&A and M&A groups for ETA, NLTA and NLCSTF. For this test, mean of local GAAP group is larger than the merged IFRS group both in the pre-mandatory adoption period and post-mandatory adoption periods for M&A firms. However, for one-way variance analysis, there is a significant difference between non-M&A and M&A groups with LACSTF. For this test, mean of local GAAP group is smaller than the merged IFRS group at a 5% level of significant both in the pre-mandatory adoption period and post-mandatory adoption period for M&A firms. However, there is a significant difference overall. LACSTF has a positive impact on accounting standards for the IFRS group in the non-M&A banks, while it has a negative effect on accounting standards for the local GAAP group in the M&A banks both pre-and post-financial crisis. The negative LACSTF coefficient drastically impacts the finance strategy in the M&A banks, less deposits relative to liquid assets, compared to non-M&A banks, which is expected to better levels of overall bank performance, as observed by O'Connell (2023). Additionally, for one-way variance analysis, there is no significant difference between non-M&A and M&A groups for CIR and NIEXPA, thus H2 hypothesis is accepted; For this test, while the mean of CIR local GAAP group is smaller than the merged IFRS group both in the pre-mandatory adoption period and post-mandatory adoption period for M&A firms, mean of NIEXPA is a larger one. Thus, there is no relationship between account standards and financial crisis both in the pre-mandatory adoption period and post-mandatory adoption periods for non-M&A and M&A bank firms.

The findings show that for one-way variance analysis, there is a significant difference between non-M&A and M&A groups for NIM. For this test, mean of local GAAP group is larger than the merged IFRS group at a 5% level of significant in the pre-mandatory adoption period for M&A firms. However, for one-way variance analysis, there is no significant difference between non-M&A and M&A groups for ROA, ROE and OOPINCA. For this test, mean of local GAAP group is larger than the merged IFRS group in the pre-mandatory adoption period for M&A firms, but OOPINCA is smaller only. These results are consistent with Cornett and Tehranian (1992).

Next, I test one-way variance analyses, using the entire sample based on the accounting standards and bank industry performance during the financial crisis in Table 4. I find that while the mean of the asset quality of the merged local GAAP group increases except for ETA and NLTA in the post-mandatory IFRS adoption period 2005 and after the 2008 financial crisis, the mean of the merged IFRS group at the 1 % significance level is decreased except for the ETA indicator before the financial crisis. In addition, I find a significant difference between the two bank groups, in particular the post-mandatory IFRS adoption period 2005 and after 2008 financial crisis.

The result shows that in the post-mandatory IFRS adoption period 2005 and after the 2008 financial crisis, assets qualities with SIZE for the one-way variance analysis, differ significantly between the non-M&A and M&A groups. For this test, the mean of the local GAAP group is smaller than the merged IFRS group at the 1% significance level both in the post-mandatory adoption period and before the 2008 financial crisis and post-mandatory adoption period and after the 2008 financial crisis for M&A firms. In Table 4, the one-way comparison of the three groups in the post-mandatory adoption period is negatively and significant at the 1% level, which suggests that M&A groups are negatively associated with the SIZE of bidders in our sample. Moreover, these results show that IFRS group banks, the M&A group and the non-M&A group tend to pay more for the SIZE increase than bidders, which may also increase the IFRS bank group's performance. This result is generally consistent with previous studies and contrasts those that show the coefficient of target asset size observed by Molyneux *et al.* (2010) and Schmid and Walter (2009).

Statistically, the proposed hypothesis H1 is accepted for the four variables (ETA, SIZE, NLTA and LACSTF) analysed in assets quality. The results show that for the one-way variance analysis, there is a significant difference between the non-M&A and M&A groups, with ETA. In addition, the finding suggests that the ETA variable has a positive impact for local GAAP groups of M&A banks in the post-mandatory adoption period during the pre-2008 financial crisis, which is consistent with Akgün (2022), showing that a higher capital structure contributes to eliminating agency problems between financial information users such as shareholders and executives. For this test, the mean of the local GAAP group is larger than the merged IFRS group at the 10% significance level both in the post-mandatory adoption period and before the 2008 financial crisis and post-mandatory adoption period and after the 2008 financial crisis for M&A firms. However, ETA has no effect on after the period of financial crisis. Concerning with the differences in capital structures, in the case of the post-mandatory IFRS adoption period and before the 2008 financial crisis mergers, capital level differences are performance enhancing. However, for the post-mandatory IFRS adoption period and after the 2008 financial crisis mergers, dissimilarities in the capital structures tend to result in lower performance. Additionally, the findings suggest that assets quality with SIZE and LACSTF has a positive impact under local GAAP on bank profitability before the financial crisis in the non-M&A banking industry, while a negative influence under the IFRS after the financial crisis in the M&A banking industry. These results are consisting with Abu Alrub *et al.* (2020).

For the NLTA variable, there was a significant difference between the non-M&A and M&A groups. For this test, the mean of the local GAAP group is higher than the merged IFRS group at the 1% significance level in this figure for M&A firms. Under the post-mandatory IFRS period and after 2008 financial crisis, the reported result suggests that there is a negative relationship and is statistically significant between NLTA and bank profitability at 1% significant level for non-M&A banks. This negative impact on bank's performance with NLTA post-mandatory adoption of the IFRS under post-2008 financial crisis is consistent with Abu Alrub *et al.* (2020). For the period of post-mandatory IFRS after the financial crisis shows that NLTA is positively and statistically significant at a 1% level under local GAAP, as same as in the period under post-IFRS on concerning before the financial crisis in both non-M&A and M&A banks. This result shows that net loans lessen the chances of achieving higher bank performance as the relationship is insignificant, in the adoption of the IFRS under the pre-financial crisis. In addition, there was a significant difference between the non-M&A and M&A groups from LACSTF. For this test, the *p*-value of the local GAAP group is smaller than the merged IFRS group at the 1% significance level both in the post-mandatory adoption period and before the 2008 financial crisis and the post-mandatory adoption period for M&A firms. However, there are a significant difference overall. Conversely, there was no significant difference between the non-M&A and M&A groups in NLCSTF. For this test, the mean of the local GAAP group is smaller than the merged IFRS group both in the post-mandatory adoption period and before the 2008 financial crisis and post-mandatory adoption period and after the 2008 financial crisis for M&A firms.

According to Altunbaş, Molyneux, and Thornton (1997), differences in cost-efficiency levels, as measured by the CIR, may not be meaningful from a corporate performance perspective. On average, however, another key study by Altunbaş and Marques Ibanez (2008) suggests that the cost-efficiency of merging banks improved the performance of both domestic and cross-border M&As. As specified, the results show that for the cost-efficiency examined items for one-way variance analysis, there is no significant difference between non-M&A and M&A groups such as CIR and NIEXPA and thus H2 hypotheses is accepted. For this test, the mean of the local GAAP group is smaller than the merged IFRS group both in the post-mandatory adoption period and before the 2008 financial crisis and the post-mandatory adoption period and after the 2008 financial crisis for M&A firms.

As far as the post-mandatory adoption period and before the 2008 financial crisis and the post-mandatory adoption period and after the 2008 financial crisis for M&A firms is concerned, the proposed H1 hypothesis is rejected for profitability variables except for NIM analysed in Table 4. The exception is NIM, which displays significant differences at the 1% level, and the mean of the local GAAP group is larger than the merged IFRS group in this period. While under the post-IFRS period on concerning the effect of the global financial crisis is positive and statically significant at the 1% level on bank profitability except for NIM negative significant in non-M&A banking industry. Similarly, the mean NIM is better using local GAAP than M&A banks using IFRS compared to banks not involved M&A. In contrast, NIM is positively related to 2008 financial crisis using local GAAP, which is in line with the results obtained by Chortareas *et al.* (2012) in both non-M&A and M&A banks. This result may increase the cost of total bank revenues, indicating that positive ratios and the efficiency benefits of higher capitalization come at a cost in terms of accounting ratios. However, for one-way variance analysis, there is no significant difference between non-M&A and M&A groups such as ROA, ROE and OOPINCA. Moreover, under the ROA, ROE and OOPINCA, the adoption of the IFRS both before the financial crisis and after the financial crisis has no effect on the bank's profitability. It is unlikely that the accounting performance of bidder banks that acquire a target with IFRS or local GAAP differs significantly from those banks not involved in M&A banks during the pre-and post-acquisition periods and financial crises.

The results also implied that the profitability ratio with NIM developed significantly, while other main indicators such as ROA, ROE and OOPINCA did not improve significantly in terms of the wealth of shareholder indicators. These results suggest that M&A did not create wealth for shareholders as its important indicators ROA, ROE and OOPINCA ratios deteriorated in both pre- and post-mandatory adoption periods. On the other hand, the M&A has an insignificant impact on the financial crisis, all the profitability, and accounting standards of banks, except for a significant improvement in the NIM ratio in the pre- and post-M&A period, which is consistent with Adhikari *et al.* (2023). For this test, the mean of the local GAAP group is larger than the merged IFRS group both in the post-mandatory adoption period and before the 2008 financial crisis and the post-mandatory adoption period and after the financial crisis for M&A firms, but only OOPINCA is smaller than one. While I find that the bidder profitability means of both the local GAAP group and the merged IFRS for non-M&A groups are on average positive except for OOPINCA until before the 2007 financial crisis, they are, on average, negative for the years from 2008 through 2012. The results are consistent with the prior literature of Banerjee, De, Jindra, and Mukhopadhyay (2014).

5. Conclusions

The study seeks to determine whether, based on a North American, EU-28 and Western European dataset covering banking firms engaged in financial intermediation functions that comprised 3,178 merger observations that cover the period 2002–2012 were impacted by accounting standards under the financial crisis. I extend the analysis by additionally investigating differences between banks' operating performances in different countries and testing whether certain mergers of these financial businesses are more likely to have higher performance of local GAAP than IFRS during the 2007–2008 crisis. In this case, I could conclude that local GAAP is of higher quality than IFRS in our sample.

The results show that IFRS group banks, the M&A group and the non-M&A group tend to pay more for the size increase than bidders, which may also increase the IFRS group banks' performance after the 2008 financial crisis. Meanwhile, in the case of the post-mandatory adoption period and before the 2008 financial crisis mergers, the capital structure of level differences is performance enhancing. However, for the post-mandatory adoption period and

after the 2008 financial crisis mergers, dissimilarities in the capital structures tend to result in lower banking performance.

While I find that the bidder profitability means of both the local GAAP group and the merged IFRS for non-M&A groups are on average positive expect for OOPINCA until before the 2007 financial crisis, they are, on average, negative for the years from 2008 through 2012, which is consistent with that observed by Banerjee *et al.* (2014). However, for one-way variance analysis, there is no significant difference between non-M&A and M&A groups, such as ROA, ROE and OOPINCA. Moreover, the mean of the local GAAP group is larger than the merged IFRS group both in the post-mandatory adoption period and before the 2008 financial crisis and post-mandatory adoption period and before the 2008 financial crisis and the post-mandatory adoption period and after the 2008 financial crisis for M&A firms, but only OOPINCA is smaller.

5.1 Theoretical and managerial implications

I examine whether the hypotheses advanced to explain the different accounting standards associated with M&A are more relevant for acquisitions by bank firms. I then examine whether banking firms are more prone to using local GAAP than IFRS and find a significant difference in accounting performance during the financial crisis.

Accounting standards measure the quality of the disclosure of accounting information and corporate governance. This variable impacts M&A activity because good disclosure is a necessary condition for identifying potential targets. In addition, accounting standards also reduce the scope for expropriation by making corporate accounts more transparent. Rossi and Volpin (2004) found that the volume of M&A activity is significantly larger in countries with better accounting standards. The study analyses the impact of corporate governance on IFRS or local GAAP by using the data from the bank M&A. However, earlier studies did not show evidence that there are a significant direct relationship with different accounting standards in the pre-and post-merger performance of the bank industry. Whether the impact of corporate governance on IFRS adoption: evidence from bank merger illustrated in our paper applies to other situations is an open question.

The study examines whether the quality of financial reporting information about the bank industry and the association between the impacts of corporate governance practices and pre- and post-merger bank performance on IFRS adoption. This study examines the association between financial reporting and bank performance and the financial attributes of the bank industry with IFRS and local GAAP. Hence, I explore to investigate the association between financial reporting quality and corporate governance on IFRS adoption. Financial reporting is an important component of any corporate governance system. In addition, many of the corporate governance systems are in place to ensure that the accounting information is used for corporate governance.

As mentioned earlier, the idea is that IFRS better reporting and disclosure benefit capital markets; for instance, by reducing information asymmetries, increasing liquidity and lowering the cost of capital. However, it is unclear whether forcing firms to use IFRS instead of local GAAP necessarily improves transparency and comparability. Firstly, adopting IFRS is unlikely to shift corporate managers' reporting incentives and the new standards might not fit a country's institutional environment. Secondly, even if IFRS improves the transparency and comparability of financial statements and analyses, managers could make some changes to the financial reporting system. Moreover, Christensen *et al.* (2013) imply that these changes could be associated with the strength of countries' legal and institutional systems. Thus, the contrasting argument does not show that accounting standards do not matter at all. It also cannot be attributed to the accounting standards alone, but likely also reflects the differences in firms' underlying motivations for IFRS adoption (Daske *et al.*, 2013).

Overall, most of the previous research explores the differences between IFRS and local GAAP and usually illustrates that IFRS increase accounting quality and decreases transaction cost of capital. I focus on whether IFRS is better for the bank M&A; statistically, our main objective is to determine whether there are significant differences in local GAAP post-merger bank performance of bidder bank findings from bidder bank applied IFRS. To summarize, in compared to IFRS versus local GAAP, high-quality IFRS adoption in the banking industry has not contributed to bank performance because the banking industry is more regulated firms, which is consistent with the findings of Akgün (2022).

5.2 Limitations and future research

Relating to studies that proxy for the differences between local GAAP and IFRS within M&A for banks in the 33 countries of our study, I use firm-level data from the crisis economies of the world, especially during the time of the 2007–2008 financial crisis. In addition, this study is limited to a sample of ten reporting periods of financial statement information prepared according to each country's own local GAAP or IFRS between 2003 and 2012. Overall, I contribute to the literature by providing shed light on the impact of IFRS or local GAAP and financial crisis during the post-merger performance.

I suggest that merged firms should perform better after they merge with banks that apply local GAAP institutions because bidder management had good knowledge of its bidder during the 2007–2008 crisis. Therefore, I find that post-merger performance is significantly larger in countries with better IFRS group and that local GAAP groups can weaken corporate governance than IFRS groups. Further research could determine the relationship between corporate governance and financial crisis under accounting standards.

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Appendix

Variables	Source	Description
1. Capital structure		
Equity to total assets (ETA)	Bloomberg	Ratio of shareholder equity to total assets*100
2. Assets structure		
Total Assets (SIZE)	Bloomberg	Logarithm of total assets (USD millions)
Net Loans to total assets (NLTA)	Bloomberg	Total net loans to total assets *100
Net Loans to deposit (NLCSTF)	Altunbaş *et al.* (2007)	Total net loans by divided total deposit
Liquid assets to total deposits (LACSTF)	Bloomberg	Ratio of liquid assets to total deposits *100
3. Cost-efficiency		
Ratio of costs to income (CIR)	Bankscope	Bank costs by divided net income
Non-interest expense to average total assets (NIEXPA)	Bankscope	Total non-interest expense by divided average total assets
4. Profitability		
Net Interest Margin (NIM)	Bankscope	Total interest income minus total interest expenses divided by total assets
Return on Assets (ROA)	Bloomberg	Ratio of net income to total assets *100
Return on Equity (ROE)	Bloomberg	Ratio of net income to total equity capital *100
Other operating income to assets (OOPINCA)	Bloomberg	Other operating income by divided total assets

Source(s): Composed by author

Table A1.
Definition of variables

About the author

Ali İhsan Akgün is currently a professor of accountancy at Ankara Yildirim Beyazit University. He received his Ph.D. from Marmara University. After receiving his B.S., he worked at Kırıkkale University as a research assistant for 5 years. He also worked for a private company as an accounting and finance manager and director for 10 years. After leaving, he joined at Ankara Yildirim Beyazit University as a senior lecturer in the department of management. Dr AKGÜN attended to the International Post-Doctoral Research Fellowship Programme at Bangor University's Business School's Banking and Finance Department between May 18, 2013 and September 20, 2015. Ali İhsan Akgün can be contacted at: aliihsan.akgun@yok.gov.tr