Capital and Earnings Management: Evidence from Alternative Banking Business Models

Marwa Elnahass⁎, Marwan Izzeldin, Gerald Steele

⁎ Corresponding author.
E-mail address: marwa.elnahas@newcastle.ac.uk (M. Elnahass).

ARTICLE INFO
JEL classifications:
C23
G01
G21
G28
L50
M4

Keywords:
IFRS
Regulatory capital management
Earnings management
Expected loan losses
Incurred loan losses

ABSTRACT
This paper examines whether institutional characteristics distinguishing Islamic from conventional banks lead to distinctive capital and earnings management behavior through the use of loan loss provisions. In our sample countries, the two banking sectors operate under different regulatory frameworks: conventional banks currently apply the “incurred” loan loss model until 2018 whereas Islamic banks mandatorily adopt an “expected” loan loss model. Our results provide significant evidence of capital and earnings management practices via loan loss provisions in conventional banks. This finding is more prominent for large and loss-generating banks. By contrast, Islamic banks tend not to use loan loss provisions in either capital or earnings management, irrespective of the bank’s size, earnings profile, or the structure of their loan loss model. This difference may be attributed to the constrained business model of Islamic banking, strict governance, and ethical orientation.

1. Introduction
A well-established stream of literature has identified the use of loan loss provisions (LLP) by bank managers in capital and earnings management.¹ Their motivation is: to avoid regulatory capital adequacy charges that are incurred in falling below the minimum capital adequacy requirements; to increase earnings-based compensation; and to prevent debt covenant violations (see e.g. Ahmed, Takeda, & Thomas, 1999; Anandarajan, Hasan, and McCarthy, 2007; Leventis, Dimitropoulos, and Anandarajan, 2011; Moyer, 1990; Wahlen, 1994). The discretionary use of capital and earnings management practices is an obvious focus for standard setters, but little emphasis has been given to study the comparative use of LLP to manage capital and earnings across Islamic and conventional banks.

Capital and earnings management can be achieved through the exercise of discretion in the magnitude or timing of the recognition of certain loan losses and in the levels reported for LLP (Ahmed et al., 1999). Where banks might deliberately engage in capital and earnings management practices via LLP, this may compromise the quality of financial reporting and generate excessive agency costs (see Anandarajan et al., 2007; Beaver and Engel, 1996; Jensen and Meckling, 1976).

The primary motivation of this study is to compare capital and earnings management practices of conventional and Islamic banks.

Abbreviations: LLP, loan loss provisions; I-LLM, incurred loan loss model; E-LLM, expected loan loss model

1 In line with Healy and Wahlen (1999) and Ahmed, Takeda, and Thomas (1999), we define capital and earnings management as the use of management’s judgment in financial reporting and in structuring transactions where the objective is to manipulate regulatory capital adequacy ratios reported in line with Basel II requirement and/or overstate/understate reported earnings in order to mislead stakeholders or to influence contractual outcomes.

https://doi.org/10.1016/j.intacc.2018.02.002
0020-7063/ Crown Copyright © 2018 All rights reserved.

Please cite this article as: Elnahass, M., International Journal of Accounting (2018), https://doi.org/10.1016/j.intacc.2018.02.002
located in the same countries but operating under different regulatory requirements. Our investigation informs regulators and investors as it responds to calls for research to establish the relevance of bank type on LLP decisions and the possible opportunistic behaviour of bank managers (Abdelsalam, Dimitropoulos, Elnahass, and Leventis, 2016; Belal, Abdelsalam, and Nizamee, 2015; Bushman and Williams, 2012; Elnahass, Izzeldin, and Abdelsalam, 2014; Fonseca and González, 2008).

The profit-loss sharing business model of Islamic banks requires contractual arrangements between a bank and its investment account holders (IAHs), i.e., depositors. This tends to constrain Islamic banks’ ability to manage capital and earnings through LLP. Moreover, agency costs are relatively higher in Islamic banks, because IAHs are not directly involved in financial and business decisions (i.e., they have no representation on the board of directors) and so must monitor their investments through published financial information. This gives rise to the possibility of managerial opportunism (Abdel Karim and Archer, 2002; Safieddine, 2009). In attempting to protect their investments, the motivation of IAHs is to try to influence regulators to monitor and develop additional governance mechanisms in Islamic banks in order to raise the quality of financial reporting.

Unlike the single governance-layer in conventional banks (i.e., board of directors and audit committees), Islamic banks are subject to an extra governance mechanism of the Shariah supervisory boards2 (see Belal et al., 2015). Furthermore, the ethos of Islamic banking emphasizes ethical behavior and moral accountability, which would be expected to place limits upon managerial opportunism through the use of LLP. From those unique institutional bank characteristics and the constrained business model of Islamic banks, our premise is that capital and earnings management using LLP is less likely in Islamic banking than conventional banking. That premise is supported by the conventional banking literature which shows that a strong institutional environment may restrain the use of accounting discretion and aggressive earnings management (Dyreng, Mayew, and Williams, 2012; Kanagaretnam, Lobo, and Wang, 2015; McGuire, Omer, and Sharp, 2012).

With growing concerns over the discretionary use of LLP, added consideration is given to the structure of loan loss models. After the financial crisis of 2007, the “incurred” loan loss model (I-LLM), as defined by IAS 39 Financial Instruments: Recognition and Measurement, was perceived to have exacerbated the upheaval by the pro-cyclical3 lending that is associated with low levels of LLP (see Fillat and Montoriol-Garriga, 2010; Wezel, Chan-Lau, and Francesc, 2012). In response, the International Accounting Standards Board (IASB) proposed a change from the “incurred” to the “expected” loan loss model (E-LLM) under IFRS 9 Financial Instruments.4 For conventional banks, the implementation of the E-LLM was deferred until 2018. However, for Islamic banks, LLP has matched the requirements of the E-LLM since at least 2010 (see Taktak, Zouari, and Boudriga, 2010; Zoubi and Al-Khazali, 2007). For Islamic banks in Bahrain, Jordan, and Qatar, the E-LLM is now mandatory (see AAOFI, 2015; ACCA and KPMG, 2010; Sarea and Hanefah, 2013). This offers an attractive setting to further examine capital and earnings management via the use of LLP as reported by Islamic and conventional banks that are located in the same countries but currently apply different regulatory frameworks (i.e., E-LLM versus I-LLM).

For the period 2007–2013, we use panel data for Bahrain, Qatar, and Jordan, comprising 441 bank-year observations (63 banks). Those three countries have a homogenous culture, similar macroeconomic features, and a dual banking system in which there is a relatively high concentration of Islamic banks (Ernst and Young, 2015b). Our findings indicate that during the whole sample period, banks tend to use LLP to manage Tier 1 capital ratio and to smooth earnings. However, the two bank types show significantly different capital and earnings management behavior. We find no evidence that Islamic banks manage capital or earnings through LLP. This is regardless of bank size and profitability position. For conventional banks, we find significant evidence of capital and earnings management practices via LLP. This tendency is more obvious when reporting financial losses than profits. We also note that regulatory capital management via LLP is more prevalent for large conventional banks while the use of LLP to manage earnings is evident irrespective of bank size. Finally, where the E-LLM model for Islamic banks mitigates lending pro-cyclicality, for conventional banks the I-LLM model accentuates pro-cyclicality in lending.

This paper contributes to the literature comparing Islamic and conventional banks in a number of ways. It is the first attempt to examine how distinctive financial reporting standards and loan loss models could lead to differentiated earnings and capital management behavior. We extend previous work on the implications of discretionary acts on financial reporting quality by Islamic and conventional banking (Abdelsalam et al., 2016; Elnahass et al., 2014; Safieddine, 2009). Second, our findings highlight the influence of adopting a constrained banking business model, characterized by risk-sharing and additional governance mechanisms, on the opportunistic use of LLP (see Giesiewicz, 2014; Dyreng et al., 2012; Leventis and Dimitropoulos, 2012; McGuire et al., 2012). In this regard, we further contribute to understanding the relevance of bank institutional characteristics on earnings management and financial reporting practices. Finally, by studying a subsample of Islamic banks that is ahead of conventional banks in applying the E-LLM, this study extends the findings of Bushman and Williams (2012) in documenting the opaqueness of this forward-looking model and its possible use in accounting discretion.

Examining the use of LLP in capital and earnings management across the two banking sectors raises issues that are relevant to investors, auditors, and regulators who seek enhanced quality of reported financial information. Our empirical assessments of the

---

2 The Shariah supervisory board operates as an internal audit unit or internal control mechanism to certify that a bank's operations are free from any element prohibited by the Islamic principles (Safieddine, 2009).

3 Pro-cyclicality implies that banks expand their loan portfolio in a boom without raising their total capital. During a cyclical downturn, capital accumulation may be insufficient for LLP to cover credit losses. Banks are then forced to reduce lending, thereby intensifying pro-cyclical effects (see Jokipii and Milne, 2008).

4 The I-LLM is a backward-looking model in that the creation of LLP is triggered by past events with no provision for the accumulation during booms of resources necessary to meet subsequent/sudden credit shocks. The E-LLM is a forward-looking model by which banks tend to build LLP in line with estimates of long-term expected loan losses; the aim is to reduce banks' exposure to increased credit risk and sudden economic shocks experienced under the backward-looking model (see Ernst and Young, 2014).
application of the proposed model in Islamic banks could assist the IASB in resolving arguments around the subjectivity of E-LLM. Findings in this study inform future banking studies examining capital and earnings management to explicitly reflect on both the alternative banking systems as well as the nature of the loan loss models applied.

The next section presents a general background. Section 3 explains the rationale of our capital and earnings management hypotheses. Section 4 outlines the data. Section 5 discusses the methodology. Section 6 presents the descriptive and empirical results. Section 7 summarizes and concludes.

2. Background

2.1. Islamic banking business model

The core feature of Islamic banking is its profit-loss sharing paradigm. That partnership arrangement implies that contractual structures are backed by real economic transactions linked to tangible assets. Although other financial products may resemble leasing contracts used in conventional banking, the latter do include elements of risk-sharing (Beck et al., 2013; Olson and Zoubi, 2008).

In trading by the profit-loss sharing principle, Islamic banks are generally viewed as more financially stable than conventional banks (see Abedifar, Molyneux, and Tarazi, 2013; Beck et al., 2013). The risk-sharing model involves a limited use of hedging instruments (see Ali, 2011). In addition, Shariah-compliant funding restricts borrowing from international money markets. From those considerations, Islamic banks are expected to apply a credit-risk management strategy that features higher loan loss reserves, higher regulatory capital ratios, and lower asset utilization relative to conventional banks.

Despite being viewed as a constrained banking model, the profit-loss sharing model allows greater discretion in the administration of investment accounts and financial reporting (see Mills and Presley, 1999) where, in the absence of direct monitoring, tighter scrutiny of financial reporting is to be expected from IAHs. That enhanced monitoring implies that adverse selection and moral hazard are less likely (see Beck et al., 2013). Moreover, in being driven by religious business orientation, agency costs associated with trading in Islamic banks and opportunistic behavior by managers are expected to be lower. Indeed, there is evidence that banks with a strong ethical commitment demonstrate a higher quality of financial reporting and less involvement in earnings management (see Choi and Pae, 2011; Hilary and Hui, 2009; Kanagaretnam et al., 2015). Furthermore, the “double-layer” of governance achieved by a Shariah supervisory board offers an additional monitoring mechanism (see Abdelsalam et al., 2016; Safieddine, 2009). In short, the stronger the firm institutional environment, the less prevalent are opportunistic and/or fraudulent practices (see Dyreng et al., 2012; McGuire et al., 2012).

2.2. Regulatory framework

Islamic banks in most countries follow the IFRS treatment of loan losses. However, despite various attempts to unify global financial reporting practices between Islamic and conventional banks, many regulatory differences remain in the type of the loan loss model that is adopted by the two banking systems.

In following IAS 39 and as currently adopted by conventional banks, the I-LLM has been subject to a number of revisions (see Ernst and Young, 2014). With this model, LLP requires a loss impairment event to occur before the financial reporting date. In citing this practice as a main cause of the 2007 financial crisis, critics have successfully argued for a forward-looking loan loss model (see Fillat and Montoriol-Garriga, 2010; Wezel et al., 2012). With the E-LLM, banks must assess their loan portfolios on the basis of a forecast of cash flows for the ensuing year (see Federation of European Accountants, 2010; Wezel et al., 2012). The idea is to build loan loss reserves during a period of economic growth in order to absorb losses in an economic downturn. However, the E-LLM is criticized for: (i) reliance on management judgment to estimate future cash flows (see Ernst and Young, 2014; Wezel et al., 2012); (ii) being less transparent, so permitting the concealment of a deteriorating loan portfolio (see Federation of European Accountants, 2010); and, (iii) the use of discretion in smoothing earnings, which may further detract from transparency and increase risk-taking (see Bushman and Williams, 2012).

Islamic banks operating under the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) in Bahrain,
Jordan, and Qatar mandatorily apply the E-LLM (AAOIFI, 2015; Taktak et al., 2010; Zoubi and Al-Khazali, 2007). Where conventional banks in the same countries adopt the I-LLM under IFRS, this offers a unique regulatory setting for our study.

3. Hypotheses development

Earlier studies that test for capital (and earnings) management through LLP either fail to test for the effect of bank type or do not distinguish between the structures of the loan loss models (see Ahmed et al., 1999; Anandarajan et al., 2007; Beatty, Chamberlain, and Magliolo, 1995; Kanagaretnam et al., 2015; Leventis et al., 2011). These aspects are important in identifying motives and underlying opportunities for differential capital (and earnings) management via LLP among the two banking sectors.

3.1. Capital management hypothesis

Motivations for capital management via LLP can be attributed to the incentive to improve or to maintain capital adequacy in order avoid official capital charges if a bank’s regulatory capital ratio falls below the minimum regulatory requirements. Prior studies in conventional banking, which examine how banks use LLP to manage regulatory capital, provide conflicting evidence. Moyer (1990) and Scholes, Wilson, and Wolfson (1990) find that banks apply discretion in using LLP when capital levels are close to violating minimum capital requirements. However, Collins, Shackelford, and Wahlen (1995) find no evidence of capital management behavior via LLP. Beatty et al. (1995) show that loan charge-offs and LLP are both used in capital management. Kim and Kross (1998) and Ahmed et al. (1999) show that regulatory capital management is an important determinant of LLP using U.S. data. Lobo and Yang (2001) find that managers also apply discretion to manipulate LLP downward to meet regulatory capital requirements. In studies of banks in other industrialized countries, Anandarajan et al. (2007) find evidence that capital management through LLP exists in Australian banks. Pérez, Salas-Fumas, and Saurina (2008) find no such evidence for Spanish banks. For Islamic banking, the prior literature that specifically tests the capital management hypothesis is meagre.

With both bank types facing capital inadequacy penalties, there is a general incentive to engage in managing through LLP, which suggests a positive association between LLP and the capital adequacy ratio (see Ahmed et al., 1999; Anandarajan et al., 2007; Leventis et al., 2011). However, considering operations through a constrained business model, in the presence of an additional governance mechanism, and with an ethical business orientation, we predict that the use of LLP by Islamic banks to manage regulatory capital is less dominant and/or more difficult when compared to conventional banks. Hence, our first hypothesis is stated as:

\[ H_{01} : \text{The positive association between the use of LLP and capital adequacy ratio is less significant in Islamic banks relative to conventional banks.} \]

3.2. Earnings management hypothesis

One implication of agency theory, bank managers can enhance firm performance and achieve managerial rewards through using LLP in income smoothing. Another strong motive for the use of LLP for earnings management is that less volatile earnings are fundamental predictors of stable share prices (Anandarajan et al., 2007). Consistent with Greenawalt and Sinkey (1988) and Beaver (1989), banks’ managers can contribute additional LLP to loan loss reserves in expansionary periods and smooth out earnings in recessionary periods in order to reduce volatility of reported earnings. Similar behavior is found in global conventional banking studies (Ahmed et al., 1999; Collins et al., 1995; Fonseca and González, 2008; Kanagaretnam, Lobo, and Mathieu, 2003; Leventis et al., 2011; Pérez et al., 2008; Wahlen, 1994).


In general terms, if earnings management is an important determinant of LLP, a significant positive association is to be expected between LLP and earnings (before taxes and LLP). Nevertheless and in line with \( H_{01} \), we suggest that Islamic banks have fewer opportunities to smooth earnings via LLP even though they are subject to the less transparent E-LLM. Hence, our second hypothesis is stated as:

\[ H_{02} : \text{There is a less significant positive association between the use of LLP and earnings (before tax and LLP) in Islamic banks relative to conventional banks.} \]

4. Data

We use an unbalanced panel dataset for listed and unlisted banks operating in Bahrain, Jordan, and Qatar, for the period

(footnote continued)
governance standards, 2 ethics standards, and 48 Shariah standards (see AAOIFI, 2015).
Table 1
Sample distributions by country and bank type.

<table>
<thead>
<tr>
<th>Country</th>
<th>Islamic banks</th>
<th>Conventional banks</th>
<th>Full sample</th>
<th>Composition Islamic banks</th>
<th>Composition conventional banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahrain</td>
<td>154</td>
<td>91</td>
<td>245</td>
<td>67%</td>
<td>38%</td>
</tr>
<tr>
<td>Jordan</td>
<td>21</td>
<td>105</td>
<td>126</td>
<td>9%</td>
<td>44%</td>
</tr>
<tr>
<td>Qatar</td>
<td>28</td>
<td>42</td>
<td>70</td>
<td>12%</td>
<td>18%</td>
</tr>
<tr>
<td>Observations</td>
<td>230</td>
<td>238</td>
<td>441</td>
<td>52%</td>
<td>54%</td>
</tr>
<tr>
<td>Banks</td>
<td>29</td>
<td>34</td>
<td>63</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Notes: The table shows the number of the Islamic banks and the conventional banks available in Bankscope, Thomson One Reuters, and Zawya for each of the three countries during the sample coverage period of 2007 to 2013. Composition (%) is the number of banks included in the sample as a percentage of the total number of banks year observations.

2007–2013. Consolidated financial data (in U.S. dollars) are collected from Thomson One Reuters, Bankscope, and Zawya databases. Although the concentration of Islamic banks is relatively high in our sample, conventional banks are larger by asset size. The sample countries features a homogenous cultural and macroeconomic environment (see Ernst and Young, 2015b). Banks located elsewhere are permitted to follow different reporting practices for LLP (i.e., either IFRS or AAOIFI). Hence, they fail to meet our test criterion for the mandatory application of E-LLM.

The relevance of the sample period is that the Capital Adequacy Standard that covers Basel II requirements became effective for mandatory implementation by Islamic banks in 2007 (see Ariss and Sariedade, 2007; IFSB, 2005). This period also allows an examination of whether bankers deviate from accounting standards and regulatory capital requirements during a period of financial distress (see Hoffmann, Post, and Pennings, 2013).

Following Beck et al. (2013), our sample selection criteria require at least two bank-year observations for each bank within one country. Islamic windows are excluded from our sample on the grounds that supervisory issues and capital adequacy requirements for those windows are different (IFSB, 2005). Our final sample, therefore, consists of 441 bank-year observations (63 banks) including 238 bank-year observations of conventional banks (34 banks) and 203 bank-year observations of Islamic banks (29 banks). Table 1 shows the distributions of banks; the highest concentration of Islamic banks is in Bahrain, while conventional banks have the highest presence in Jordan.

5. Methodology

We test the capital (and earnings) management for Islamic and conventional bank using the regression specification outlined in Greenawalt and Sinkey (1988) and Ahmed et al. (1999). In our application, we examine the impact of bank characteristics and loan-loss regulatory frameworks on capital ($H_{01}$) and earnings ($H_{02}$) management. With the baseline model outlined by Eq. (1), we use fixed-effects estimations for the full sample and for the Islamic and conventional bank sub-samples:

\[
\text{ LLP}_{it} = \beta_0 + \beta_1 \text{TIER}_{1, t-1} + \beta_2 \text{EBTLLP}_{it} + \beta_3 \Delta \text{NPL}_{it} + \beta_4 \Delta \text{LOANS}_{it} + \beta_5 \text{LISTING}_{it} + \beta_6 \text{LEV}_{it} + \beta_7 \text{CRISIS}_{it} + \beta_8 \text{GDP}_{it} + \beta_{10} \sum_{t=2007}^{2013} \gamma_t + \epsilon_{it}
\]

Where

LP is the ratio of loan loss provisions to total assets.

TIER 1_{t-1} ratio is the ratio of the total bank Tier 1 capital to risk weighted assets. This represents core capital. It is an equity-like direct measure of a bank’s capacity to establish LLP. Tier 1 capital is the sum of equity book value, qualifying non-cumulative preferred stock, and minority interests in equity accounts of subsidiaries, less goodwill and other intangible assets. While the ratio reflects regulatory adjustments to equity, it is also a measure of financial health. As suggested by Ahmed et al. (1999), we

9 For the treatment of the outliers, we winsorized each variable at the 5th and 95th. As a robustness check, we also considered 1st-99th winsorization for all observations. Although the main findings are consistent, we observe slightly worse goodness-of-fit statistics.

10 The Hausman test reported the presence of systematic differences between the fixed and random effects (chi square = 26.78). Results are robust when employing the Generalized Method of Moments (GMM) for the full study sample. However, using fixed-effects allows more bank-year observations and control for heterogeneity across banks (Fonseca and Gonzalez, 2008; Laien and Majnoni, 2003). Diagnostic tests performed for all estimated models finds no evidence of multicollinearity. We used the Variance Inflation Factor (VIF) to detect multicollinearity among our independent variables. We also utilized the Durbin-Wu-Hausman test to examine whether our model suffer from endogeneity problem. The White-general test is conducted to test for heteroscedasticity in error variances. VIF reports a mean of 1.65 which is well below the 10. This suggests that our model is not subject to a multicollinearity problem. Under the Durbin-Wu-Hausman test, the F-statistic reports a p-value of (0.954), which indicates that our estimation procedures mitigate endogeneity. The White test shows a Chi-square p-value of (0.891), which implies that heteroscedasticity is marginal at the 10% level.

11 Under Basel II, Islamic and conventional banks must maintain a minimum ratio of 4% of Tier 1 capital and 8% of total capital (IFSB, 2005).

12 We argue that the use of the total capital ratio could lead to spurious inferences from the net tax effect of increasing Tier 1 and Tier 2 ratios. Before the amendment of the Basel Accords (1988), the regulatory capital ratio was expected to be negatively related to LLP; i.e., banks with low regulatory capital requirements had incentives to raise LLP (see Ahmed et al., 1999). These incentives were related to tax savings. Under Basel II, LLP must be included as a component of Tier 2 capital, eliminating loan loss reserves from Tier 1 capital. Moreover, examination of the associations between the total capital ratio and LLP is expected to be influenced by different national tax regimes across different bank types. In Bahrain, Islamic banks are tax exempt while in Qatar and Jordan, tax treatment depends on the legal form of the transactions. Islamic banks also have to pay a wealth tax (Zakat) (PwC, 2012).
use a lagged value for the Tier 1 ratio to indicate the availability of a capital cushion to increase LLP. Banks first signal their solvency through core capital in a prior reporting period before discretionarily increasing LLP in a subsequent period\(^\text{13}^\) (Bushman and Williams, 2012).

EBTLLP (Earnings before taxes and LLP) is a measure of a bank’s capacity to use its assets to generate earnings in advance of its contractual obligations and LLP (Leventis et al., 2011). If the desire to smooth income is an important determinant of LLP, we should observe a positive relation between LLP and EBTLLP (Anandarajan et al., 2007).\(^\text{14}^\)

\(\Delta NPL\) is the change in non-performing loans and \(\Delta LOANs\) is the change in total loans. We follow prior studies by including \(\Delta NPL\) and \(\Delta LOANs\) to control for the non-discretionary component of LLP (see Ahmed et al., 1999; Jacques, 2010; Moyer, 1990). More specifically, \(\Delta NPL\) is a proxy for default risk, whereas \(\Delta LOANs\) controls for changes in a bank’s lending profile. We expect both variables to have positive coefficients. An increase in the quality of a loan portfolio and the outstanding total loan levels should increase the relative magnitude and timeliness of LLP (see Fonseca and González, 2008; Greenawalt and Sinkey, 1988).

LISTING is an indicator variable, taking a value of 1 for listed banks and 0 for unlisted banks. Controlling for listing aims to capture the positive association between a firm’s listing status and accounting manipulations (Beatty and Harris, 1999; Fonseca and González, 2008). Listed banks tend to report higher Tier 1 ratios and higher earnings to support their financial outlook in stock market trading (Anandarajan et al., 2007; Leventis et al., 2011).

LEV is the leverage ratio (total debt to total common equity). This ratio captures the degree to which a bank's potential capital saving is affected by underwriting risks (see Kiema and Jokivuolle, 2014). Leverage levels are expected to be positive, but relatively lower for Islamic banks given the absence of interest payments, non-trading in prohibited activities, and the inability to raise funds by indirect market operations.

Both the GDP and CRISIS variables capture the effect of macroeconomic conditions on LLP. GDP is the annual growth rate of national income. By controlling for GDP, we identify the effect of pro-cyclicality in LLP. With rapid GDP growth, we expect borrowing to increase and that banks will need to increase LLPs to cater for additional risk. A negative coefficient on GDP implies that banks expand their loan portfolios in periods of rapid growth without making commensurate provision through LLP, so inducing procyclical effects (see Fonseca and González, 2008; Leventis et al., 2011).

As an indicator variable for the crisis period, CRISIS takes the value 1 for years 2007–2009 and 0 elsewhere. In a recession, we expect a negative association between LLP and CRISIS given the adverse implications of poor economic conditions on the level of LLP (see Cohen, Cornett, Marcus, and Tehrani, 2014).

IB is a bank type dummy variable (taking the value 1 for Islamic banks, and 0 for conventional banks).

To control for heteroscedasticity and endogeneity, all time series variables are normalized using total bank assets at the beginning of year \(t\) (TA\(_t\), \(t = 1\)). Standard errors of estimated coefficients are corrected for heteroscedasticity (see Easton and Sommers, 2003; Barth and Kallapur, 1996). Our panel estimation controls only for unobserved time effects (\(T_t\)) and unobserved heterogeneity across banks (\(v_i\)) without imposing restrictive conditions on the correlation between the regressors and the error term.\(^\text{15}^\)

To test \(H_{01}\) and \(H_{02}\) across the full sample, we extend our baseline model to include conditional interactions between bank type and capital (and earnings) management measures. This is specified in Eq. (2) as:

\[
LLP_{it} = \beta_0 + B_1 IB* TIER 1_{it-1} + B_2 IB* EBTLLP_{it-1} + B_3 CB* TIER 1_{it-1} + B_4 CB* EBTLLP_{it-1} + B_5 \Delta NPL_{it-1} + B_6 \Delta LOANs_{it-1} \\
+ \beta_7 LISTING_{it} + \beta_8 LEV_{it} + \beta_9 CRISIS_{it} + \beta_{10} GDP_{it} + \beta_1 IB_{it} + \beta_2 \sum_{t=2007}^{2013} T_t + \beta_3 v_i + \epsilon_{it}\]

(2)

The interaction variables \(IB*TIER 1_{it-1}\) and \(CB*TIER 1_{it-1}\) examine the capital management hypothesis \(H_{01}\) by classifying banks as either Islamic (IB) or conventional (CB) whereas \(IB*EBTLLP\) and \(CB* EBTLLP\) test for differential earnings management. We predict the coefficients of Islamic banks (\(\beta_3\) and \(\beta_4\)) to be positive but lower in magnitude and significance than those for conventional banks (\(\beta_2\) and \(\beta_4\)).

6. Results

6.1. Descriptive statistics and correlation analyses

Table 2 panels A, B, and C report the descriptive statistics for the full sample and the Islamic and conventional subsamples. We also report the two-sample \(t\)-test to examine for the significance of the subsamples means.

For the full sample, we report averages of 22.16% for TIER1\(_{t-1}\) and 16.92% for EBTLLP. With the TIER1\(_{t-1}\) exceeding the threshold of 4%, this indicates that our sample banks are well capitalized and can be classified as income-generating banks. The regulatory capital ratio for both bank types is right-skewed, which is consistent with the Basel II requirement for banks to keep a capital buffer above the required minimum. According to Berger, DeYoung, Flannery, Lee, and Öztekin (2008), Basel II procedures deliver discretionary benefits to “well-capitalized” banks that hold Tier 1 capital ratio of at least 4% of risk weighted assets. Although these primary results suggest that our banks are well-capitalized in period \(t-1\), their management might remain motivated to...

\(^{13}\) With a low level of LLP and a high level of Tier 1 capital reported in a preceding period, managers might have incentives to inflate current LLP in order to (i) avoid falling below the minimum capital adequacy requirement; (ii) reduce the volatility of bank capital adequacy; and (iii) reduce the possibility of having to draw from core capital if actual loan losses exceed expected losses.

\(^{14}\) In an attempt to provide cross-country evidence demonstrating the variations in the loan loss provisioning across banks, we do not control for country-specific effects.
continue preserving their adequate capital positions through the use of LLP in subsequent periods, where the aim is to prevent capital violation charges (Leventis et al., 2011).

The t-test statistics show that Islamic banks have significantly higher levels of LLP and TIER 1\textsubscript{t−1}. This suggest that they are more capitalized than conventional banks, which is consistent with the findings of Beck et al. (2013). The significantly lower EBTLLP for Islamic banks highlights their avoidance of more risky investments, their reliance upon fee-based contracts, and their relatively higher administrative costs (see Abedifar et al., 2013). Indicators for default risk (ΔNPL) and loan growth (ΔLOANS)—which are significantly lower for Islamic banks—accord with other studies (Beck et al., 2013). In addition, Islamic banks are significantly less leveraged and smaller in size than conventional banks.

Table 3 presents Pearson Pair-Wise correlations for the full sample (Panel A), Islamic banks (Panel B), and conventional banks (Panel C). For the sub-samples, conventional banks show significant positive correlations between LLP and both TIER 1\textsubscript{t−1} and EBTLLP, with no significant evidence for Islamic banks. For both Islamic and conventional banks, positive correlations between LLP and ΔNPL (and ΔLOANS) suggest that an increase in LLP is associated with high default risk and high credit growth. Correlations between LLP and other control variables are in line with prior literature. All correlations among independent variables are within accepted limits and raise no concerns with respect to multicollinearity.

6.2. Empirical results

Table 4 reports the results for the baseline model in Eq. (1). In the full sample, a significant positive coefficient on Tier 1\textsubscript{t−1} suggests that banks tend to have a high Tier 1 ratio in period t − 1 and that they are likely to increase their LLP in period t. We also find significant evidence of income smoothing, with a significant positive association between LLP and EBTLLP. These findings are in
line with Kim and Kross (1998) and Anandarajan et al. (2007). For Islamic banks, both Tier 1 and EBTLLP are insignificantly associated with LLP, indicating the absence of capital (and earnings) management via LLP. For conventional banks, the discretionary use of LLP to manage regulatory capital and earnings is supported by positive and highly significant coefficients on Tier 1 and EBTLLP.

For the full sample and each of the subsamples, the coefficient for ΔNPL is positive and significant; i.e., LLP is associated with a decline in the performance of the loan portfolio. The greater magnitude and significance of the coefficient on ΔNPL indicate that this effect is more pronounced for conventional banks. These results indicate lower default risk in Islamic banks (Abedifar et al., 2013).

In Table 5, we estimate Eq. (2), which extends the baseline model in Eq. (1), in two ways. For the full sample, we run conditional panel estimation allowing for bank-specific effects and first-differences decomposition of the dependent variables EBTLLP, ΔNPL and ΔLOANS. We also estimate the same model specification for a subsample which excludes large banks. With a greater propensity to engage in risk-taking activities, larger banks are more likely to adopt discretionary practices via LLP to minimize their capital violation penalties, to

Table 3

<table>
<thead>
<tr>
<th>Variables</th>
<th>LLP</th>
<th>Tier 1, t−1</th>
<th>EBTLLP</th>
<th>ΔNPL</th>
<th>ΔLOANS</th>
<th>LEV</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel A: full sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LLP</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tier 1, t−1</td>
<td>0.025***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBTLLP</td>
<td>0.385***</td>
<td>−0.077</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔNPL</td>
<td>0.013</td>
<td>0.019</td>
<td>0.023**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔLOANS</td>
<td>0.057**</td>
<td>−0.180*</td>
<td>0.157</td>
<td>0.291**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>0.017</td>
<td>−0.511***</td>
<td>−0.292</td>
<td>0.071</td>
<td>0.135</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>−0.031***</td>
<td>−0.102</td>
<td>0.244**</td>
<td>−0.175</td>
<td>0.079</td>
<td>0.033</td>
<td>1</td>
</tr>
</tbody>
</table>

<p>| Panel B: Islamic banks subsample |</p>
<table>
<thead>
<tr>
<th>Variables</th>
<th>LLP</th>
<th>Tier 1, t−1</th>
<th>EBTLLP</th>
<th>ΔNPL</th>
<th>ΔLOANS</th>
<th>LEV</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLP</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tier 1, t−1</td>
<td>0.033</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBTLLP</td>
<td>0.296</td>
<td>−0.053</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔNPL</td>
<td>0.285***</td>
<td>0.027**</td>
<td>0.071**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔLOANS</td>
<td>0.110**</td>
<td>−0.135</td>
<td>0.151</td>
<td>0.615</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>0.147</td>
<td>−0.378</td>
<td>0.195</td>
<td>0.323**</td>
<td>0.100</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>−0.025</td>
<td>−0.352</td>
<td>0.147</td>
<td>0.122</td>
<td>0.055</td>
<td>0.048</td>
<td>1</td>
</tr>
</tbody>
</table>

<p>| Panel C: conventional banks subsample |</p>
<table>
<thead>
<tr>
<th>Variables</th>
<th>LLP</th>
<th>Tier 1, t−1</th>
<th>EBTLLP</th>
<th>ΔNPL</th>
<th>ΔLOANS</th>
<th>LEV</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLP</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tier 1, t−1</td>
<td>0.047***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBTLLP</td>
<td>0.248***</td>
<td>−0.072</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔNPL</td>
<td>0.049**</td>
<td>0.013</td>
<td>0.044**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔLOANS</td>
<td>0.020**</td>
<td>−0.380</td>
<td>0.280</td>
<td>0.055**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>0.029</td>
<td>−0.522***</td>
<td>0.135**</td>
<td>0.048</td>
<td>0.124</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>−0.053***</td>
<td>−0.102</td>
<td>0.138**</td>
<td>−0.152</td>
<td>0.045</td>
<td>0.070</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: The table reports for the full sample pairwise correlation coefficients for bank specific (LLP, ΔNPL, ΔLOANS, LEV), macroeconomic (GDP), capital management (Tier 1, t−1) and income smoothing (EBT) variables included in our estimation. Panel A: presents the results for the full sample including conventional and Islamic with 441 bank-year observations. Panel B: results for Islamic sub-sample comprising 203 bank-year observations. Panel C: results for the sub- of conventional banks representing 238 bank-year observations. ** and *** denote significance at the 5% and 1%, respectively.
overall, the absence of capital and earning management through LLP in Islamic banks can be explained on several grounds. First, to examine whether there is a significant difference between capital (and earnings) management practices in both bank types, we estimate the coefficients on both the IB*TIER 1t and IB*EBTLP interaction variables confirm the absence of capital and earnings management in Islamic banks. For conventional banks, both CB*TIER 1t and CB*EBTLP are significant and positively associated with LLP. Findings on the associations between LLP and control variables are unchanged.

For the sub-sample that excludes large banks, we find that Islamic banks still show no significant change with respect to earnings and capital management. However, for conventional banks, the coefficient on CB*TIER 1t is no longer significant whereas that on CB*EBTLP is significant and positive. These results suggest that the discretionary use of LLP in capital management within conventional banks is more prevalent in large banks but that bank size has no influence on their earnings management behavior. These findings are consistent with prior evidence that large banks have greater incentives to maintain a strong regulatory capital adequacy position, given their close monitoring by investors and regulators (Beatty, Ke, and Petroni, 2002; Kanagaretnam et al., 2015). To examine whether there is a significant difference between capital (and earnings) management practices in both bank types, we compare the coefficients on Islamic and conventional banks interaction variables. The reported F-test indicates that the coefficients on (IB*TIER 1 = CB*Tier 1) and (IB*EBTLP = CB*EBTLP) are statistically different. This indicates a rejection of the null of no significant difference between capital and earnings management practices which supports the results reported for H01 and H02.

Overall, the absence of capital and earnings management through LLP in Islamic banks can be explained on several grounds. First, the business model of Islamic banks promotes greater prudence and risk-averse attitude (see Beck et al., 2013). Second, with the inability to raise funds via direct market operations, Islamic banks operate on lower utilization levels of their assets, which is likely to promote higher capital buffers. Third is the effects of the ethical business orientation, monitoring by IAHs, and additional governance by the Shariah supervisory boards.

From the above findings we argue that despite the motives and incentives to smooth earnings via LLP under the E-LLM framework, Islamic banks tend not to do so. This may reflect the impact of strong governance mechanisms and moral accountability in limiting accounting discretion (see Dyreng et al., 2012; Hilary and Hui, 2009; Kanagaretnam et al., 2015; McGuire et al., 2012).
6.3. Sensitivity analyses

We extend the base-line (Eq. (1)) to allow for a dummy that captures banks’ failures to meet earnings targets (LOSSit). Based on the EBTLLP, the LOSSit is an indicator variable which takes the value 1 for loss-generating banks and 0 otherwise. We interact LOSSit with both TIER 1t−1 and each bank classification dummy (i.e., IB for Islamic banks and CB for conventional banks). Our extended model is specified as:

$$LPL_{it} = \beta_0 + \beta_1 \text{IB} \times \text{TIER}_{1t-1} + B_2 \text{IB} \times \text{EBTLLP}_{it} + \beta_3 \text{CB} \times \text{TIER}_{1t-1} + B_4 \text{CB} \times \text{EBTLLP}_{it} + \beta_5 \text{ANPL}_{it} + \beta_6 \text{ΔLOANS}_{it} + \beta_7 \text{LISTING}_{it} + \beta_8 \text{LEV}_{it} + \sum_{t=2007}^{2013} T_i + \beta_{12} \text{IB} + \varepsilon_t$$

We expect that banks reporting negative earnings are more likely to increase LLP to avoid falling below the minimum capital adequacy requirement. For each bank type, and in line with our hypotheses, lower significance and magnitude are predicted for the coefficient on LOSS*IB*TIER 1t−1 than that on LOSS*CB*TIER 1t−1.

In Table 6, results for the full sample show that the coefficient on LOSS*IB*TIER 1t−1 is positive but insignificant. Islamic banks show consistent evidence of not managing regulatory capital through LLP even when they are reporting losses. For conventional banks, results show a highly significant and positive coefficient on LOSS*CB*TIER 1t−1 suggesting that loss-generating conventional banks are more likely to engage in regulatory capital management via LLP. This finding is in line with Kanagaretnam et al. (2003), who show that poorly performing conventional banks are more likely to discretely use LLP to manage regulatory capital. The F-test for the two bank subsamples indicates statistically different capital management behavior via LLP.

<table>
<thead>
<tr>
<th>Variables Predicted sign</th>
<th>Full sample</th>
<th>Excluding large banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB*TIER 1t−1</td>
<td>+ 0.011</td>
<td>0.016</td>
</tr>
<tr>
<td>IB*EBTLLP</td>
<td>+ 0.026</td>
<td>0.019</td>
</tr>
<tr>
<td>CB*TIER 1t−1</td>
<td>+ 0.019***</td>
<td>0.014</td>
</tr>
<tr>
<td>CB*EBTLLP</td>
<td>+ 0.034***</td>
<td>0.026***</td>
</tr>
<tr>
<td>ΔNPL</td>
<td>+ 0.021**</td>
<td>0.020**</td>
</tr>
<tr>
<td>ΔLOANS</td>
<td>+ 0.040***</td>
<td>-0.035</td>
</tr>
<tr>
<td>LISTING</td>
<td>+ 0.022***</td>
<td>0.012***</td>
</tr>
<tr>
<td>LEV</td>
<td>+ -0.025</td>
<td>-0.040</td>
</tr>
<tr>
<td>CRISIS</td>
<td>- -0.053**</td>
<td>-0.050***</td>
</tr>
<tr>
<td>GDP</td>
<td>- -0.023**</td>
<td>-0.030**</td>
</tr>
<tr>
<td>IB</td>
<td>? 0.024**</td>
<td>0.023**</td>
</tr>
<tr>
<td>IB<em>TIER 1t−1 = CB</em>TIER 1t−1, (F-Test)</td>
<td>33.75</td>
<td>43.21</td>
</tr>
<tr>
<td>IB<em>EBTLLP = CB</em>EBTLLP, (F-Test)</td>
<td>8.94</td>
<td>20.64</td>
</tr>
</tbody>
</table>

Notes: The table reports Fixed-Effects estimations for testing the capital and earnings management hypotheses for the full sample and after dropping large banks (holding of total assets exceeding $100 billion). Our specified model is defined as:

$$LPL_{it} = \beta_0 + \beta_1 \text{IB} \times \text{TIER}_{1t-1} + B_2 \text{IB} \times \text{EBTLLP}_{it} + \beta_3 \text{CB} \times \text{TIER}_{1t-1} + B_4 \text{CB} \times \text{EBTLLP}_{it} + \beta_5 \text{ANPL}_{it} + \beta_6 \text{ΔLOANS}_{it} + \beta_7 \text{LISTING}_{it} + \beta_8 \text{LEV}_{it} + \sum_{t=2007}^{2013} T_i + \beta_{12} \text{IB} + \varepsilon_t$$

Standard errors of estimated coefficients are adjusted for heteroscedasticity. P-values are between parentheses. ** and *** denote significance at the 5% and 1% levels, respectively.

6.3. Sensitivity analyses

We extend the base-line (Eq. (1)) to allow for a dummy that captures banks’ failures to meet earnings targets (LOSSit). Based on the EBTLLP, the LOSSit is an indicator variable which takes the value 1 for loss-generating banks and 0 otherwise. We interact LOSSit with both TIER 1t−1 and each bank classification dummy (i.e., IB for Islamic banks and CB for conventional banks). Our extended model is specified as:

$$LPL_{it} = \beta_0 + \beta_1 \text{IB} \times \text{TIER}_{1t-1} + B_2 \text{IB} \times \text{EBTLLP}_{it} + \beta_3 \text{CB} \times \text{TIER}_{1t-1} + B_4 \text{CB} \times \text{EBTLLP}_{it} + \beta_5 \text{ANPL}_{it} + \beta_6 \text{ΔLOANS}_{it} + \beta_7 \text{LISTING}_{it} + \beta_8 \text{LEV}_{it} + \sum_{t=2007}^{2013} T_i + \beta_{12} \text{IB} + \varepsilon_t$$

We expect that banks reporting negative earnings are more likely to increase LLP to avoid falling below the minimum capital adequacy requirement. For each bank type, and in line with our hypotheses, lower significance and magnitude are predicted for the coefficient on LOSS*IB*TIER 1t−1 than that on LOSS*CB*TIER 1t−1.

In Table 6, results for the full sample show that the coefficient on LOSS*IB*TIER 1t−1 is positive but insignificant. Islamic banks show consistent evidence of not managing regulatory capital through LLP even when they are reporting losses. For conventional banks, results show a highly significant and positive coefficient on LOSS*CB*TIER 1t−1 suggesting that loss-generating conventional banks are more likely to engage in regulatory capital management via LLP. This finding is in line with Kanagaretnam et al. (2003), who show that poorly performing conventional banks are more likely to discretely use LLP to manage regulatory capital. The F-test for the two bank subsamples indicates statistically different capital management behavior via LLP.
7. Conclusion

In this study we empirically assess the impact of different banking business models on capital and earnings management practices. We explicitly examine the discretionary use of loan loss provisions for capital and earnings management. Our unique setting for testing capital and earnings management is where conventional and Islamic banks co-exist in the same countries but are subject to different regulatory frameworks to account for loan losses. We find evidence for the influence of bank type on capital and earnings management. Significant differences do exist in the capital and earnings management behavior between Islamic banks and conventional banks. Islamic banks tend not to engage in either capital or income smoothing through LLP, even under the wide latitude of discretion permitted through the expected loan loss model. These results hold regardless of the bank size and profitability position.

For conventional banks, we find significant evidence for the use of loan loss provisions to manage both regulatory capital and earnings. Capital management is more evident for large conventional banks. Discretionary acts via loan loss provisions are more pronounced for conventional banks with poor earnings performance. We provide evidence that, unlike the expected loan loss model, the incurred loan loss model accentuates pro-cyclicality in lending.

Findings in this study suggest that the opportunistic use of loan loss provisions is sensitive to the constraints imposed by the business model and the system of governance employed in banks. The expected loan loss model is soon to be universally adopted via IFRS 9. This will present an opportunity to examine the impact upon the earnings management practices of conventional banks.

Acknowledgement

We would like to thank the editor, the associate editor, and two anonymous reviewers for their constructive feedback and directions. We acknowledge the academic support from the Gulf One Lab for Computation and Economic Research (GOLCER) at Lancaster University. We thank the participants of the European Accounting Association Conference at Dauphine University Paris, the NWDTC conference at Lancaster University and the 3rd Islamic Banking and Finance Conference at Aston University for their valuable comments.

---

### Table 6
Regression analysis of capital and earnings management identifying the effects for loss-generating banks.

<table>
<thead>
<tr>
<th>Variables Predicted sign</th>
<th>Full sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOSS<em>IB</em>TIER, (1_{t-1})</td>
<td>(?) 0.015 (0.625)</td>
</tr>
<tr>
<td>LOSS<em>CB</em>TIER, (1_{t-1})</td>
<td>(?) 0.015*** (0.003)</td>
</tr>
<tr>
<td>LOSS</td>
<td>(-) -0.023** (0.003)</td>
</tr>
<tr>
<td>ΔNPL</td>
<td>(+) 0.012** (0.048)</td>
</tr>
<tr>
<td>ΔLOANS</td>
<td>(+) 0.023** (0.041)</td>
</tr>
<tr>
<td>LISTING</td>
<td>(+) 0.025*** (0.000)</td>
</tr>
<tr>
<td>LEV</td>
<td>(+) -0.031 (0.083)</td>
</tr>
<tr>
<td>CRISIS</td>
<td>(-) -0.017** (0.027)</td>
</tr>
<tr>
<td>GDP</td>
<td>(-) -0.029*** (0.003)</td>
</tr>
<tr>
<td>IB</td>
<td>(?) 0.018** (0.000)</td>
</tr>
</tbody>
</table>

\(\text{LOSS}^\text{IB}^\text{TIER} \ 1_{t-1} = \text{LOSS}^\text{CB}^\text{TIER} \ 1_{t-1}, \ \text{F-Test}\) 45.96

Year fixed effects Yes
Bank specific effects Yes
Adjusted \(R^2\) 0.320
Bank-year observations 441

Notes: The table reports Fixed-Effects estimations for testing the capital management hypothesis for the full sample to test for the loss-generating banks. LOSS is a dummy indicator equal 1 for loss-generating banks and 0 for profit-generating banks. Our specified model is defined as:

\[
\text{LLP}_{it} = \beta_0 + \beta_1 \text{LOSS}^\text{IB}^\text{TIER} \ 1_{t-1} + \beta_2 \text{LOSS}^\text{CB}^\text{TIER} \ 1_{t-1} + \beta_3 \text{LOSS}_{it} + \beta_4 \Delta \text{NPL}_{it} + \beta_5 \Delta \text{LOANS}_{it} + \beta_6 \text{LISTING}_{it} + \beta_7 \text{LEV}_{it} + \beta_8 \text{CRISIS}_{it} + \beta_{IB} \text{IB}_{it} + \beta_{GDP} \text{GDP}_{it} + \beta_{IB} \text{IB}_{it} \sum_{t=2007}^{2013} \text{T}_{it} + \beta_{IB} \text{IB}_{it} + \epsilon_{it}
\]

Standard errors of estimated coefficients are corrected for heteroscedasticity. P-values are between parentheses. ** and *** denote significance at the 5% and 1% levels, respectively.
Appendix A. Variable definitions and descriptions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Notation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan loss provisions</td>
<td>( LLP_i, t )</td>
<td>Loan loss provisions at year ( t ). The variable is normalized by total assets at the beginning of year ( t ) (( TA_{i, t-1} )).</td>
</tr>
<tr>
<td>One-period lagged Tier 1 ratio</td>
<td>( TIER_{1, t-1} )</td>
<td>Ratio of Tier 1 capital to risk weighted assets for the year ( t-1 ).</td>
</tr>
<tr>
<td>Earnings before taxes and LLP</td>
<td>( EBTTLPP_i, t )</td>
<td>Earnings before taxes and loan loss provisions at year ( t ). The variable is normalized by total assets at the beginning of year ( t ) (( TA_{i, t-1} )).</td>
</tr>
<tr>
<td>Change in non-performing loans</td>
<td>( \Delta NPL_{it} )</td>
<td>Change in non-performing loans estimated as the difference between year ( t ) and year ( t-1 ). The variable is normalized by total assets at the beginning of year ( t ) (( TA_{i, t-1} )).</td>
</tr>
<tr>
<td>Change in total loans</td>
<td>( \Delta LOANS_{it} )</td>
<td>Change in total loans at year ( t ) estimated as the difference of the bank's total loans between year ( t ) and ( t-1 ). The variable is normalized by total assets at the beginning of year ( t ) (( TA_{i, t-1} )).</td>
</tr>
<tr>
<td>Listing status</td>
<td>( LISTING_{it} )</td>
<td>Dummy variable for the listing status of bank ( i ) at time ( t ), equal 1 if the bank is listed; 0 otherwise.</td>
</tr>
<tr>
<td>Leverage ratio</td>
<td>( LEV_{it} )</td>
<td>Leverage ratio equal to total debt to total common equity for bank ( i ) at time ( t ).</td>
</tr>
<tr>
<td>Financial crisis</td>
<td>( CRISIS_{it} )</td>
<td>Time dummy equal 1 for the sample period of 2007–2009 and 0 otherwise.</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>( GDP_{it} )</td>
<td>The country-prevailing GDP growth rate at time ( t ).</td>
</tr>
<tr>
<td>Bank type dummy</td>
<td>( IB_i )</td>
<td>Dummy variable equal 1 for IBs; 0 for CBs.</td>
</tr>
<tr>
<td>One-period lagged total assets</td>
<td>( TA_{i, t-1} )</td>
<td>Total assets for bank ( i ) at time ( t-1 ).</td>
</tr>
<tr>
<td>LOSS</td>
<td>( LOSS_{it} )</td>
<td>Dummy variable testing for loss-generating banks equals 1 if banks ( i ) at time ( t ) is generating losses and 0 for a profit-generating bank at time ( t ).</td>
</tr>
</tbody>
</table>

Notes: definitions and notations for test variables in the empirical models examined in this study.

References


