IAS 39, income smoothing, and pro-cyclicality: evidence from Hong Kong banks

Azira Abdul Adzis
School of Economics, Finance and Banking, Universiti Utara Malaysia, Kedah, Malaysia

David W.L. Tripe
School of Economics and Finance, Massey University, Palmerston North, New Zealand, and

Paul Dunmore
School of Accountancy, Massey University, Palmerston North, New Zealand

Abstract

Purpose – The purpose of this study is to investigate the impact of International Accounting Standard 39 (IAS 39) on income-smoothing activities and pro-cyclical behavior through loan loss provisions using a sample of Hong Kong banks.

Design/methodology/approach – Fixed effects estimator is used, and the analysis covers the period from 2000 to 2009.

Findings – The results suggest that Hong Kong banks engage less in income-smoothing activity after they comply with the IAS 39. No evidence supports loan loss provisions of Hong Kong banks exhibiting more pro-cyclical behavior after IAS 39 adoption.

Research limitations/implications – Compliance with IAS 39 should improve the quality of bank financial reporting. The reduction in income-smoothing activities among Hong Kong banks after IAS 39 adoption fairly supports the effectiveness of International Financial Reporting Standard (IFRS) and countries that have yet to comply with IFRS may take action to apply the standards. Bank regulators should take pro-active action in addressing the issue of pro-cyclicality of loan loss provisions, as IAS 39 focuses more on improving the financial information quality, while pro-cyclicality is associated with the economic cycles.

Originality/value – Hong Kong banking industry is unique, as it was among the first IFRS adopters in the East Asia region and it has its own legal framework for developing accounting standards. The results of this study are expected to shed some light on the effects of IAS 39 adoption on income smoothing and pro-cyclicality of banks in the East Asia region, where the accounting cultural value dimensions and institutional structures are different than that of European countries.

Keywords Banks, Accounting and auditing

Paper type Research paper

1. Introduction

The year 2005 was when Hong Kong Financial Reporting Standards (HKFRSs) were fully converged with International Financial Reporting Standards (IFRSs) commencing since January 1. The new accounting standards replaced the previously used standards,

Statements of Standard Accounting Practice (SSAP). Hong Kong was among the first IFRS adopters in the East Asia region following its first adoption in the European Union (EU) in 2005.

IFRS is intended as a standardized, high-quality and transparent set of accounting standards, able to remove accounting differences across jurisdictions. As highlighted by Sir David Tweedie (2008), the Chairman of the International Accounting Standard Board during that time, IFRSs were designed to provide an economic assessment of an entity at a particular date – to record the value of an entity today, not what it was worth yesterday or to predict its value tomorrow.

The introduction of the new standards, however, has implications for the banking industry predominantly in the aspect of loan impairment recognition under the International Accounting Standard 39 (*IAS 39) Financial Instruments: Recognition and Measurement*. (In Hong Kong, it is known as HKAS 39.) Under IAS 39, an impairment loss is recognized only when there is objective evidence of impairment as a result of one or more events occurring after the initial recognition of the asset. This means that banks are not allowed to make provisions based on the likelihood that loans might default, but only on objective evidence that they will default. In contrast, the impairment rules under SSAP provide no specific guidelines in the aspect of loss recognition, with bank managers able to consider numerous factors including, but not limited to, domestic and international economic condition, the composition of the loan portfolio and prior loan loss experience in determining the level of loan loss provisions.

The positive implication of the incurred loss approach[1] under IAS 39 is that it may restrain bank managers from using loan loss provisions to manipulate accounting and regulatory figures in bank's financial statements. The negative implication is that IAS 39 may exacerbate the pro-cyclical behavior of bank loan loss provisioning, as IAS 39 forces banks to recognize loan losses later, causing provisions to be increased during economic downturns. Consequently in bad times, an increase in loan loss provisions would affect bank's profit, weaken the bank's capital, diminish its lending activities to creditworthy borrowers and eventually trigger a credit crunch that might worsen the economic downturn (Wall and Koch, 2000).

This study, therefore, examines the impact of IAS 39 adoption on income-smoothing activity and pro-cyclical behavior through loan loss provisions for banks in Hong Kong. Hong Kong is chosen because it was among the first IFRS adopters in the East Asia region[2], and studying the effects of IAS 39 may provide an insight into the effects of more transparent accounting standards on the quality of financial reporting of banks in that region. This is because Fan and Wong (2002) and Ball *et al.* (2003) document that East Asian countries including Hong Kong tend to prepare low-quality financial reporting due to preparer's incentives. In addition, Leuz *et al.* (2003) suggest that East Asian countries have worse earnings management than other common-law tradition counterparts. This provides a motivation to investigate whether the robust disclosure requirement under IAS 39 influences the behavior of Hong Kong banks in the aspect of income smoothing and pro-cyclicality.

The findings demonstrate that the adoption of IAS 39 has relatively reduced the income-smoothing activity of Hong Kong banks, consistent with the findings of Leventis *et al.* (2011) and Gebhardt and Novotny-Farkas (2011), who use European banks sample. This suggests that the IFRS objective to improve the quality and transparency of financial information around the globe is fairly achieved. In the aspect

of pro-cyclicality, no concrete evidence to support that loan loss provisions of banks in Hong Kong exhibiting more pro-cyclical behavior after IAS 39 adoption. This may explain that IAS 39 focuses more on improving the financial information quality, while pro-cyclicality is more connected with the economic cycles.

This study contributes to the existing literature in two important ways. First, it adds to the body of research on the effects of IAS 39 adoption on income-smoothing activity of banks in the East Asia region, where the accounting cultural value dimensions and institutional setting are different than that of European countries[3]. Second, it contributes to the accounting and banking literature by providing evidence on the effects of IAS 39 adoption on pro-cyclicality of bank loan loss provisioning, an issue which has received less attention in prior research.

The remainder of the paper is organized as follows: Section 2 discusses prior research and develops the hypotheses for our study. Section 3 describes the sample and data and explains the model used. Results and sensitivity checks are presented in Section 4, while Section 5 summarizes and concludes.

2. Hong Kong banking industry and accounting regulation

Hong Kong, a Special Administrative Region (SAR) of the Republic of China, is an international financial center that has one of the highest concentrations of banking institutions in the world. Of the largest 100 banks in the world, 70 have an operation in Hong Kong. Hong Kong maintains a three-tier system of deposit-taking institutions, namely, licensed banks, restricted license banks and deposit-taking companies. As at June 30, 2015, there are 183 licensed banks (162 incorporated outside Hong Kong and 21 incorporated in Hong Kong), 16 restricted license banks and 20 deposit-taking companies operating in Hong Kong. Hong Kong banking industry is supervised and regulated by the Hong Kong Monetary Authority (HKMA), a government authority that is responsible for maintaining the monetary and banking stability in Hong Kong. HKMA prescribes certain financial information to be reported periodically to HKMA, as well as certain accounting and reporting requirements for the general-purpose financial statements of banks.

As one of two SARs of China (the other being Macao), Hong Kong has its own legal system, including its own legal framework for developing accounting standards. The Hong Kong Institute of Certified Public Accountants (HKICPA) is a professional organization that operates under the Professional Accountants Ordinance that has the responsibility for regulating and promoting efficient accounting practices in Hong Kong to safeguard its leadership as an international financial center. The HKICPA is the only body authorized by law to promulgate financial reporting, auditing and ethical standards for professional accountants in Hong Kong. The HKICPA also develops standards and interpretations of HKFRS.

3. Literature review and hypothesis development

3.1 IAS 39 and earnings management

Income smoothing is a common form of earnings management and can be defined as manipulating accounting methods (as a result of discretion in accounting principles) to smooth the variability of a firm's earnings. In the banking industry, it happens when bank managers purposely allocate higher provisions in good years (when income is high) to cover losses that normally happen in bad years, when income is low

(Greenawalt and Sinkey, 1988; Wetmore and Brick, 1994). It also occurs when bank managers understate expected loan losses to increase net income and capital in the current year (Benston and Wall, 2005). Income smoothing lessens the volatility of reported income, but it does not reflect the true performance of banks, effectively misleading shareholders and regulators.

The manipulation activities are made easier by flexible guidelines under local accounting standards in determining loan loss provisions. For example, in the Bank of East Asia's 2004 Annual Report (Hong Kong-based bank), the provision for loan losses is determined as follows:

> Provision is made against specific doubtful debts as and when they are considered necessary by the Credit Committee with authority delegated by the Board of Directors and, in addition an amount has been set aside as a general provision for advances.

This statement leaves leeway for bank managers in setting loan loss provisions, providing no specific guidelines or formulae to calculate them. The word "necessary" may imply any amount that the bank managers can put aside.

On the contrary, IFRS generally and IAS 39 particularly are principle-based standards that require extensive disclosure of financial information. They may limit the use of loan loss provisions to smooth income because IAS 39 requires banks to disclose an accurate provision for bad debts and prohibits hidden reserves. In addition, banks are no longer allowed to make provisions based on an expected loss approach, having to use the incurred-loss approach instead. The incurred-loss approach, which prohibits the use of management estimates of future losses, may reduce managerial discretion in measuring loan loss provisions. This is further supported by Barth et al. (2008) and Ewert and Wagenhofer (2005), who suggest that the efforts put in by standards-setters to remove accounting options in the international accounting standards could improve accounting quality and mitigate earnings management.

Empirical studies by Leventis et al. (2011) and Gebhardt and Novotny-Farkas (2011), focusing on EU listed banks, support the notion that IAS 39 reduces earnings management in banking institutions. Gebhardt and Novotny-Farkas's findings particularly emphasize that the incurred loss approach under IAS 39 reduces income-smoothing activity of banks. Both studies, however, focus on banks in the EU jurisdiction, where the accounting cultural dimensions and institutional structure are different from banks in Hong Kong, an Asian-Colonial country. To date, there are limited studies that examine the effects of IAS 39 on banks in East Asian countries, particularly Hong Kong banks. This study expects that the adoption of IAS 39 among Hong Kong banks will also lead to less earnings management, as IAS 39 requires more extensive disclosure of financial information. Therefore, *H1* will be as follows:

H1. Banks that comply with IAS 39 engage less in income smoothing through loan loss provisions.

3.2 IAS 39 and pro-cyclicality
Ernst and Young (2006) stress the potential pro-cyclicality of IAS 39 by outlining three aspects of the loan impairment rules:

(1) IAS 39 is an incurred-loss model, and provisions are not permitted to be made in respect of expected future losses, no matter how likely they are to arise.

(2) The levels of provisions should reflect current economic conditions.

(3) Loan loss calculations under IAS 39 must reflect the net present value of future recoveries, discounted at the original effective interest rate on the loan.

Following these rules, banks are expected to make more provisions during downturns and less in boom times, as losses will only be recognized after they have occurred, with the amount depending on economic conditions. Therefore, *H2* will be as follows:

H2. Banks that comply with IAS 39 exhibit more pro-cyclical behavior through loan loss provisions.

4. Methodology
4.1 Sample and data
This study utilizes a sample of 13 Hong Kong banks from the period 2000-2009. In total, there are 21 licensed banks incorporated in Hong Kong, but only 13 banks are included due to the data unavailability. Data were extracted from consolidated income statement and balance sheet and obtained primarily from the Bankscope database from Bureau van Dijk. Macroeconomic data, such as gross domestic product (GDP), was taken from the World Development Indicators (WDIs). To ensure the selected banks adopted IAS 39 beginning from January 1, 2005, annual reports for each bank were checked. All banks in the sample started adopting IFRS-equivalent standards, HKFRS, beginning from January 1, 2005, except Industrial and Commercial Bank of China (Asia) and Public Bank (HK) Limited, which began from January 1, 2006. The period of analysis, from 2000 to 2009, covers the period before (2000-2004) and after IFRS adoption (2005-2009). The list of banks used as sample in this study are as follows:

- Bank of East Asia Limited;
- Chiyu Banking Corporation;
- Chong Hing Bank Limited;
- Citic Bank International Limited;
- Dah Sing Bank;
- Fubon Bank;
- Hang Seng Bank;
- Hong Kong and Shanghai Banking Corporation;
- Industrial and Commercial Bank of China (Asia);
- Nanyang Commercial Bank;
- Public Bank (HK) Limited;
- Shanghai Commercial Bank Limited; and
- Wing Lung Bank.

4.2 Model
To test the income-smoothing and pro-cyclical hypotheses, a baseline regression model (Model 1) modified from Kilic *et al.* (2013) and Bouvatier *et al.* (2014) is used:

$$LLP_{it} = \alpha + \beta_1 POST_t + \beta_2 EBTP_{it} + \beta_3 GDP_t + \beta_4 BLLA_{it} + \beta_5 LWO_{it}$$
$$+ \beta_6 LOAN_{i,t-1} + \beta_7 \Delta LOAN_{it} + \beta_8 POST_t \times EBTP_{it}$$
$$+ \beta_9 POST_t \times GDP_t + \varepsilon_{it} \qquad (1)$$

Where LLP_{it} is the loan loss provisions of bank i at year t scaled by average total assets; $POST_t$ is a dummy variable which equals 1 for the post-IAS 39 period and 0 otherwise; $EBTP_{it}$ is earnings before taxes and provisions scaled by average total assets; GDP (GDP_t) is an annual growth of real per capita GDP; $BLLA_{it}$ is the beginning loan loss allowance scaled by average total assets; LWO_{it} is loan write-off/charge-off scaled by average total assets; $LOAN_{i,t-1}$ is the beginning period of total loans divided by total assets; $\Delta LOAN_{it}$ is change in total loans outstanding scaled by average total assets; $POST_t \times EBTP_{it}$ is an interaction term to capture the evidence of reduction in income smoothing after IAS 39 adoption; and $POST_t \times GDP_t$ is an interaction term to capture the evidence of more pro-cyclical behavior after IAS 39 adoption. Variables definitions and expected sign are provided in Table I.

Following existing studies (Fonseca and Gonzalez, 2008; Kilic et al., 2013 and Bouvatier et al., 2014), this study uses loan loss provisions (LLP) as dependent variable to test the evidence of income smoothing and pro-cyclicality through loan loss provisions. Loan loss provisions is the largest accrual expense for banks, and existing studies suggest that banks use loan loss provisions to smooth income (Wahlen, 1994; Kanagaretnam et al., 2004; Anandarajan et al., 2007; Fonseca and Gonzalez, 2008; Kilic et al., 2013; Bouvatier et al., 2014). Another studies associate loan loss provisions with the pro-cyclical behavior (Laeven and Majnoni, 2003; Bikker and Metzemakers, 2005).

Variable	Definition	Expected sign
LLP_{it}	Loan loss provision expense scaled by average total assets	N/A
$POST_t$	Dummy variable that equals 1 for post IAS 39 adoption, and 0 otherwise	N/A
$EBTP_{it}$	Earnings before taxes and loan loss provisions scaled by average total assets	+
GDP_t	GDP growth rate, per cent	−
$BLLA_{it}$	Beginning loan loss allowance scaled by average total assets	−
LWO_{it}	Loan write-off/charge-off scaled by average total assets	+
$LOAN_{i,t-1}$	Beginning period of total loans divided by total assets	+
$\Delta LOAN_{it}$	Change in total loans outstanding scaled by average total assets	+
$POST \times EBTP_{it}$	Interaction term to capture the evidence of reduction in income smoothing after IAS 39 adoption	−
$POST \times GDP_t$	Interaction term to capture the evidence of more pro-cyclical behavior of loan loss provisions after IAS 39 adoption	−
$CAP_{i,t-1}$	Lagged ratio of equity to total assets	+
$\Delta EBTP_{i,t+1}$	One-year-ahead change in income before taxes and provisions scaled by average total assets	+
$SIZE_{it}$	Bank size, measured by the natural logarithm of total assets	+
$LISTED_{it}$	Dummy variable that equals 1 for listed bank and 0 otherwise	+
GFC_t	Dummy variable for crisis years, 1 for years 2007-2009 and 0 otherwise	+

Table I.
Variable definitions

Earnings before taxes and loan loss provisions (EBTP) is used to measure the evidence of income smoothing (Greenawalt and Sinkey, 1988; Ahmed *et al.*, 1999; Fonseca and Gonzalez, 2008; Kilic *et al.* 2013; Bouvatier *et al.*, 2014). A positive relationship with LLP will provide evidence for income smoothing, as banks tend to increase their loan loss provisions when earnings are expected to be high.

The relationship between GDP growth and LLP will provide evidence for pro-cyclical behavior, where a negative relationship implies that banks increase their loan loss provisions when the business cycle falls (Laeven and Majnoni, 2003; Bikker and Metzemakers, 2005).

BLLA, LWO, LOAN and ΔLOAN are used to control for the non-discretionary components of LLP. The BLLA is used as a measure of default risk, where a higher beginning loan loss allowance will require a lower LLP (Wahlen, 1994; Kanagaretnam *et al.*, 2004; Kilic *et al.* 2013). This is because this year's loan loss provisions should be expected to be lower if managers in previous periods have built up higher allowances. Current loan write-offs/charge-offs (LWO_{it}) contains information about future charge-offs that may influence the collectability of current loans (Beaver and Engel, 1996). Loan write-offs reduce the allowance account in the balance sheet, and to restore the allowance account to a safer level, the loan loss provisions should be increased. Thus, LWO is expected to be positively correlated with LLP. Another measurement for default risk is ΔLOAN or loan growth (Bikker and Metzemakers, 2005). A higher loan growth would typically be associated with a higher probability of default, where banks need to set aside more loan loss provisions to absorb more expected losses. Therefore, the coefficient of loan growth is expected to be positively related with LLP.

The beginning period of total loans, $LOAN_{i,t-1}$, is a proxy for the credit risk of a bank's loan portfolio. An increase in loan portfolio at the beginning of the period will force bank to increase its loan loss provisions to commensurate with the risk taken. The coefficient, therefore, is expected to be positive.

To test for reduction in income-smoothing activities after IAS 39 adoption, the interaction term POST × EBTP is used. The coefficient is expected to be negative as income-smoothing activities through loan loss provisions might reduce following the adoption of IAS 39. Another interaction term, POST × GDP will test whether IAS 39 causes more pro-cyclical behavior of loan loss provisions. The coefficient, therefore, is expected to be negative.

Besides income smoothing, existing studies document that loan loss provisions are also used for capital management[4] (Wahlen, 1994; Beatty *et al.*, 1995; Ahmed *et al.*, 1999) and signaling[5] (Wahlen, 1994; Kanagaretnam *et al.*, 2004; Kanagaretnam *et al.*, 2005). In addition, Beatty and Harris (1998) and Beatty *et al.* (2002) report that publicly held banks are more likely to manage earnings than privately held banks due to agency problems and information asymmetry. Moreover, the political cost hypothesis assumes that larger firms are more likely to use accounting discretion to manipulate reported profit because of regulatory scrutiny (Watts and Zimmerman, 1990). The study period of this paper also covers a period of economic downturn in 2007-2009. El Sood (2012) in his study finds that banks smooth their income upwards during the financial crisis. Accordingly, five additional variables are incorporated into Model 1 to derive Model 2:

$$LLP_{it} = \alpha + \beta_1 POST_t + \beta_2 EBTP_{it} + \beta_3 GDP_t + \beta_4 BLLA_{it} + \beta_5 LWO_{it}$$
$$+ \beta_6 LOAN_{i,t-1} + \beta_7 \Delta LOAN_{it} + \beta_8 POST_t x\, EBTP_{it} + \beta_9 POST_t \times GDP_t$$
$$+ \beta_{10} CAP_{i,t-1} + \beta_{11} \Delta EBTP_{i,t+1} + \beta_{12} SIZE_{it} + \beta_{13} LISTED_{it} + \beta_{14} GFC_t \quad (2)$$
$$+ \varepsilon_{it}$$

Where $CAP_{i,t-1}$ is the lagged ratio of equity to total assets to control for capital management, $\Delta EBTP_{i,t+1}$ is the next period's change in income before taxes and provisions to control for signaling, $SIZE_{it}$ is the natural logarithm of total assets of bank i in year t to control for size effect, $LISTED_{it}$ is a dummy variable that takes a value 1 if the bank is a listed bank and 0 otherwise to control for publicly held banks and GFC_t is a dummy variable that takes a value of 1 for years 2007-2009 and 0 otherwise to control for 2007-2009 global financial crisis.

The coefficient for CAP is expected to be positive as banks with lower regulatory capital have incentives to not recognize losses so as to maintain capital ratios (Wahlen, 1994; Beatty *et al.*, 1995; Ahmed *et al.*, 1999). $\Delta EBTP$ is expected to have a positive coefficient with LLP as previous studies highlight that banks use LLP to signal their future earnings prospects (Wahlen, 1994; Kanagaretnam *et al.*, 2004, 2005). SIZE and LISTED are expected to have a positive coefficient with the LLP. Finally, GFC is expected to be positively related to LLP, as banks tend to increase their loan loss provisions during recessions (El Sood, 2012). All regression models are controlled for bank specific and time fixed effects[6].

5. Empirical results
5.1 Descriptive statistics
Table II provides descriptive statistics for the variables used in estimating Models 1 and 2. The mean ratio of LLP is 0.3 per cent for the pre-IAS 39 period and 0.15 per cent for the post-IAS 39 period, which is consistent with the study by Kilic *et al.* (2013)[7]. The mean differences are significant at the 1 per cent level, indicating that the loan loss provisions of Hong Kong banks are relatively reduced after the implementation of IAS 39. The

	Pre-IAS 39 (2000-2004)		Post-IAS 39 (2005-2009)		Mean differences
Variable	Mean	SD	Mean	SD	(Ho: $\mu_{PRE} = \mu_{POST}$)
LLP	0.0032	0.0037	0.0015	0.0025	0.0017***
EBTP	0.0166	0.0053	0.0147	0.0062	0.0019*
GDP	4.354	3.2765	4.010	3.8551	0.344
BLLA	0.0156	0.0118	0.0038	0.0024	0.0118***
LWO	0.0051	0.0049	0.0013	0.0018	0.0038***
LOAN	0.4850	0.0900	0.4941	0.0998	−0.0091
ΔLOAN	0.0390	0.1057	0.0609	0.0686	−0.0219
CAP	0.1067	0.0277	0.0971	0.0244	0.0096**
ΔEBTP	0.0989	0.6585	0.1337	0.6787	−0.0348
SIZE	25.11	1.2849	25.64	1.2892	
LISTED	0.4769	0.5033	0.4462	0.5010	

Table II.
Descriptive statistics
for regression
variables

Note: ***, ** and *represent significance at 1, 5 and 10% level, respectively

mean ratio of EBTP is 1.66 per cent for the pre-IAS 39 period and decreases to 1.47 per cent for the post-IAS 39 period. The mean differences are weakly significant at the 10 per cent level. The descriptive statistics show that loans make up approximately 49 per cent of the bank's assets, reflecting the moderate lending activities of Hong Kong banks.

Table III reports the correlation matrix and variance inflation factor (VIF) test for all variables. Although the correlation matrix does not suggest the likelihood of any multicollinearity problem, this is further confirmed by estimating the relevant VIFs, where the results satisfied the rule of thumb of less than 10, for no multicollinearity problem.

5.2 Income-smoothing and pro-cyclical behavior test
The results for the baseline model, Model 1, are reported in Table IV Column 3. As predicted, the coefficient on the EBTP is significant and positive (coefficient = 0.3727, $p = <0.001$), reflecting that Hong Kong banks use discretionary loan loss provisions to smooth income. This is consistent with the findings of existing studies (Ahmed *et al.*, 1999; Fonseca and Gonzalez, 2008; Kilic *et al.*, 2013; Bouvatier *et al.*, 2014), where banks overstate loan loss provisions when earnings are expected to be high. The macroeconomic variable, GDP, is significantly negative, affirming the evidence of pro-cyclical behavior of LLP, which is consistent with the findings of Laeven and Majnoni (2003), Bikker and Metzemakers (2005) and Fonseca and Gonzalez (2008).

The variable for measuring default risk, beginning loan loss allowance (BLLA), is negative and significant, indicating that Hong Kong banks lower current year's loan loss provisions when the previous year's loan loss allowance is high. This is consistent with the finding of Kanagaretnam *et al.* (2004). Loan write-off (LWO) shows a positive and significant coefficient with LLP, implying that Hong Kong banks use current loan write-off to signal for future loan defaults. The proxy for the credit risk, beginning total loans to total assets ($LOAN_{i,t-1}$) is insignificant, suggesting that loan portfolio risk does not determine the loan loss provisions of the Hong Kong banks.

Contradicting with the earlier prediction, loan growth ($\Delta LOAN$) shows a negative and significant coefficient, suggesting that Hong Kong banks lower loan loss provisions when loan growth is high. This finding is similar to Laeven and Majnoni (2003), where it might explain the optimistic behavior of Hong Kong banks with regard to lending activities, as bankers tend to ease their credit standards during expansion. Moreover, banks may expect lower default rates in good economic times (Berger and Udell, 2004) that may lead to lower monitoring efforts, causing bankers to lower the loan loss provisions.

The main variable of interest, the interaction term of POST $\times$ EBTP, is negatively and statistically significant (coefficient = $-0.1298, p = 0.039$), indicating a reduction in the income-smoothing activity for banks in Hong Kong following IAS 39 adoption. The insignificant coefficient for POST $\times$ GDP provides insufficient evidence to recommend that IAS 39 encourages more pro-cyclical behavior of loan loss provisions. Wald tests are run to test the difference in effects between the period before and after IAS 39 adoption. As shown in Table IV for Models 1 and 2, Wald tests for both interaction terms are highly significant ($p < 0.000$); therefore, both interaction terms should be included in the model because at least one slope coefficient differs across groups.

Variable	LLP	EBTP	GDP	BLLA	LWO	LOAN	ΔLOAN	CAP	ΔEBTP	SIZE	LISTED
Panel A: Correlation matrix											
LLP	1.0000										
EBTP	0.1253	1.0000									
GDP	−0.2548*	0.1331	1.0000								
BLLA	0.2529*	0.0186	0.0072	1.0000							
LWO	0.7080*	0.0889	−0.1209	0.7058*	1.0000						
LOAN	0.3109*	−0.4345*	−0.0982	0.1816*	0.2744*	1.0000					
ΔLOAN	−0.0388	−0.1022	0.1317	0.2236*	0.1121	0.4096*	1.0000				
CAP	0.0960	−0.0037	0.0129	0.1987*	0.1450	0.0030	−0.1456	1.0000			
ΔEBTP	0.2262*	0.2257*	0.0278	0.0224	0.1864*	0.0941	0.0503	0.0794	1.0000		
SIZE	−0.2762*	0.3166*	−0.0506	−0.2634*	−0.2749*	−0.2696*	−0.0397	−0.5767*	0.0005	1.0000	
LISTED	0.0405	−0.2767*	−0.0014	−0.1917*	−0.0392	0.2548*	−0.0155	−0.2355*	0.0363	0.0614	1.0000

	VIF	1/VIF
Panel B: VIF		
EBTP	1.70	0.5886
GDP	1.14	0.8743
BLLA	2.37	0.4217
LWO	2.54	0.3943
LOAN	1.85	0.5415
ΔLOAN	1.42	0.7045
CAP	1.74	0.5744
ΔEBTP	1.16	0.8604
SIZE	1.95	0.5118
LISTED	1.34	0.7437
Mean VIF	1.72	

Note: *Significance at 5% level (two-tailed)

Table III.
Correlation matrix and variance inflation factor test

Independent variables	Predicted sign	Dependent variable: Loan loss provisions	
		Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)
POST	?	0.0025 (0.033)**	0.0030 (0.035)**
EBTP	+	0.3727 (0.000)***	0.4008 (0.000)***
GDP	−	−0.0002 (0.024)**	−0.0001 (0.037)**
BLLA	−	−0.0627 (0.039)**	−0.0964 (0.003)***
LWO	+	0.4378 (0.000)***	0.3762 (0.000)***
$\text{LOAN}_{i,t-1}$	+	−0.0012 (0.677)	0.0014 (0.637)
ΔLOAN	?	−0.0040 (0.053)**	−0.0025 (0.284)
POST × EBTP	−	−0.1298 (0.039)**	−0.1299 (0.057)*
POST × GDP	−	−0.0001 (0.244)	−0.0001 (0.189)
$\text{CAP}_{i,t-1}$	+		−0.0000 (0.993)
$\Delta\text{EBTP}_{i,t+1}$	+		0.0002 (0.497)
SIZE			−0.0031 (0.001)***
LISTED			0.0003 (0.759)
GFC			0.0008 (0.177)
Interaction dummies		Yes	Yes
Year fixed effects		Yes	Yes
Bank fixed effects		Yes	Yes
Wald tests $\beta_{EBTP} + \beta_{EBTP \times POST} = 0$ [*p*-value]		18.94 (0.0000)***	20.56 (0.0000)***
Wald tests $\beta_{GDP} + \beta_{GDP \times POST} = 0$ [*p*-value]		10.16 (0.0001)***	7.06 (0.0014)***
R^2		0.3665	0.3509
F-statistic		25.86 (0.0000)***	18.87 (0.0000)***
Number of observations		126	124
Number of banks		13	13

Note: ***, ** and * represent significance at 1, 5, 10% level, respectively

Table IV.
Test of income smoothing and pro-cyclical behavior before and after IAS 39 adoption

5.3 Robustness checks

Table IV Column 4 reports the results of analysis incorporating additional control variables. The findings show that the coefficient of EBTP remains positive and statistically significant. This affirms the evidence for income-smoothing activities in the sample before the adoption of IAS 39. The signs of the coefficients on GDP, BLLA and LWO are consistent with Model 1 and are statistically significant, while the coefficients for $\text{LOAN}_{i,t-1}$ and ΔLOAN are insignificant.

The coefficient for POST × EBTP remains negative and significant (coefficient = −0.1299, $p = 0.057$), affirming that the income-smoothing activity in the sample fairly decreased after IAS 39 adoption. This finding complements those of Leventis *et al.* (2011) and Gebhardt and Novotny-Farkas (2011) but need to be interpreted with caution, as this study suffers from a small number of observations. The coefficient for POST × GDP remains insignificant, reflecting inconclusive evidence to support the proposition that the incurred loss model under IAS 39 causes more pro-cyclical behavior of loan loss provisions.

The results for Model 2 provide no evidence for capital management and signaling as the coefficients for $\text{CAP}_{i,t-1}$ and $\Delta\text{EBTP}_{i,t+1}$ are insignificant. The negative and significant coefficient for SIZE suggests that the loan loss provisions of larger banks in

Hong Kong are lower than that of smaller banks, probably due to the close monitoring by the regulators. The insignificant coefficient for LISTED indicates that there is no significant difference between listed and unlisted banks in Hong Kong in the aspect of loan loss provisioning. Finally, the insignificant coefficient for GFC signifies that banks in Hong Kong did not do artificial adjustment on their loan loss provisioning during the crisis years.

For further robustness checks, the sample was divided into sub-period category: Pre-IAS 39 period and post-IAS 39 period. Table V reports the results of sub-period analysis. Confirming the previous analysis on the evidence of income smoothing, the coefficient for EBTP remains positive and statistically significant (coefficient = 0.7145, $p = 0.000$) for the period before IAS 39 adoption (2000-2004). As for the period after IAS 39 adoption (2005-2009), the coefficient for EBTP is no longer significant, but the value is relatively lower than that of pre-IAS 39 period, signifying that the income-smoothing activity is somewhat reduced. The coefficient for GDP remains negative and statistically significant for the pre-IAS 39 period, indicating the pro-cyclical behavior of loan loss provisions. The GDP, however, turns out to be insignificant for the post-IAS 39 period, signifying no evidence of pro-cyclical behavior after IAS 39 adoption. Overall, it can be concluded that compliance with IAS 39 has relatively reduced income-smoothing activity for banks in Hong Kong, but this should be interpreted with caution, as this study suffers from a small number of observations.

6. Conclusion
This study investigates the effects of IAS 39 under the IFRS on bank income-smoothing activity and pro-cyclical behavior through loan loss provisions of Hong Kong banks. The results indicate that the compliance with IAS 39 leads to less income-smoothing activity for banks in Hong Kong, consistent with the findings of Leventis *et al.* (2011) and Gebhardt and Novotny-Farkas (2011). On the other hand, no conclusive evidence to

Independent variables	Predicted sign	Pre-IAS 39 (2000-2009) Coefficient (p-value)	Post-IAS 39 (2005-2009) Coefficient (p-value)
EBTP	+/−	0.7145 (0.000)***	0.0430 (0.340)
GDP	−	−0.0002 (0.015)**	−0.0001 (0.111)
BLLA	−	−0.0298 (0.440)	−0.3473 (0.000)***
LWO	+	0.2076 (0.026)**	1.0254 (0.000)***
LOAN$_{i, t-1}$	+	−0.0045 (0.273)	0.0009 (0.675)
ΔLOAN	?	−0.0084 (0.004)***	−0.0033 (0.441)
Year fixed effects		Yes	Yes
Bank fixed effects		Yes	Yes
R^2		0.0774	0.7929
F-statistic		16.88 (0.0000)***	28.99 (0.0000)***
Number of observations		64	61
Number of banks		13	13

Dependent variable: loan loss provisions

Table V. Test of income smoothing and pro-cyclical behavior: Pre-IAS 39 and post-IAS 39

Notes: Variables are defined in Table I; *** and ** represent significance at 1 and 5% level 5 respectively

support the conjecture that IAS 39 causes more pro-cyclical behavior of loan loss provisions.

The results should be interpreted with some limitations. The number of banks is fairly small, and this leads to a small numbers of observations. Having a small number of observations might reduce the accuracy of statistical analysis, and therefore, the findings might be driven by lack of powerful estimation. In addition, this study suffers from a short time period for IAS 39 adoption years (2006-2009); therefore, the results might not provide a robust support of the actual effects of IAS 39 implementation. Expanding the study period and adding a large number of banks would provide a more robust analysis for the future research.

The results have policy implications. IFRS is relatively new, and accounting standard-setters are continually finding ways to improve the new standards. Compliance with IAS 39 should improve the quality of the financial reporting of a bank balance sheet due to the enhancement in financial information transparency that may reduce scope for manipulation. The reduction in income-smoothing activities after IAS 39 adoption offers some support for the effectiveness of IFRS, and we suggest that countries which have yet to comply with IFRS may apply the standards.

In the aspect of pro-cyclicality, Huizinga and Laeven (2009) have argued that bank regulators should take pro-active action in addressing the issue of pro-cyclicality of loan loss provisions. The regulators take this issue seriously as in March 2009, the Financial Stability Forum report, the Joint Financial Stability Forum (FSF) and the Basel Committee on Banking Supervision (BCBS) Working Group met to assess approaches to the issue of pro-cyclicality of bank provisioning, including the implementation of dynamic provisioning. The FSF also urged bank regulators (Basel Committee) and accounting standard-setters (IASB) to cooperate to deal with the issue.

Notes

1. The incurred-loss model has been effective since 2005, and due to the controversial issue of this approach, in November 2009, the IASB issued an Exposure Draft "Financial Instruments: Amortized Cost and Impairment" with the plan of switching to expected loss approach. After series of discussions, the IASB tentatively decided to require an entity to apply IFRS 9 (replacement of IAS 39) for annual periods beginning on or after January 1, 2018.

2. East Asia countries include Cambodia, China, Indonesia, Korea, Malaysia, Myanmar, Philippines, Thailand and Vietnam. This classification is based on World Bank database. Hong Kong is not a country; it is a SAR of the Republic of China.

3. Hofstede (1980) classifies countries by culture areas, where Hong Kong and Singapore are classified as Asian-Colonial, while European countries are classified as either Nordic, Anglo or Germanic. Accounting system of Asian-Colonial countries is determined and enforced by statutory control, while in contrast, the Nordic, Anglo and Germanic countries are enforced by professional.

4. Banks with low capital may manipulate loan provisioning to meet capital requirements imposed by the bank regulator.

5. Bank managers tend to increase loan loss provisions to signal good news to investors as an increase in loan loss provisions implies that the bank can deal with its problem loans prudently.

6. Hausman's specification test was run to test whether to apply a fixed effects or random effects model. The results (not reported) show that the null hypothesis, that fixed and random effects models do not differ substantially, was rejected. This means that the fixed effects model is preferable to the random effects model.

7. Kilic *et al.* (2013) report the mean ratio of LLP in between 0.2 and 0.4 percent.

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Further reading

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Corresponding author

Azira Abdul Adzis can be contacted at: azira@uum.edu.my

الاستشارات