Sarawan Angklomkliew
sarawana@bot.or.th

Jason George
jason.george@bis.org

Frank Packer
frank.packer@bis.org

Issues and developments in loan loss provisioning: the case of Asia[1]

In the aftermath of the Asian financial crisis of the late 1990s, many jurisdictions in Asia strengthened their approaches to loan loss provisioning, including the adoption of discretionary measures. This has contributed to stronger banking systems in the region.

JEL classification: G21, G28.

Loan loss provisions[2] have traditionally been backward-looking and highly procyclical. That is, they have tended to be low ahead of banking crises, and to rise sharply as losses mount. In response to the latest crisis, national and international authorities are considering measures to promote more forward-looking provisioning practices that would result in banks entering periods characterised by a deterioration in credit quality with higher levels of reserves. As loan losses materialise, the already higher level of reserves would reduce the downward pressure on bank earnings and capital that would otherwise occur.

Provisioning practices in Asia may provide useful lessons. Since the late 1990s, spurred by the severe losses of the Asian financial crisis, most jurisdictions in Asia have adopted more conservative loan loss provisioning standards. Some have implemented measures designed to secure larger provisions during times of economic and credit growth. As a result, loan loss reserves and provisioning expense levels were generally higher leading into the current financial crisis than they were before the Asian crisis. From a global perspective, they were also higher than those of many countries outside Asia that were significantly affected by the crisis.

[1] The authors thank Eric Chan for excellent research assistance, and Claudio Borio, Stephen Cecchetti, Robert McCauley, Ilhyock Shim, Christian Upper and Haibin Zhu for helpful comments on earlier drafts. The views expressed in this article are those of the authors and not necessarily those of the Bank of Thailand, the Financial Stability Institute or the Bank for International Settlements.

[2] Technically speaking, loan loss provisions and reserves are two distinct concepts. The former reflects the flow of expenses, whereas the latter refers to a stock on the balance sheet. Often, however, these two concepts are lumped together under the broad heading of “loan loss provisioning”.

This article is organised as follows. The first section provides a conceptual overview of loan loss provisioning and related issues. The second describes the regulatory approaches to provisioning in Asia. The third links these approaches to outcomes, reporting on observed provisioning levels in Asia over the past decade, in particular before and during the current crisis. The last section concludes.

Overview of loan loss provisioning

In making loans, banks face the risk that borrowers will default and the full amount of the loan will not be recovered. When a loan loss becomes likely, a bank will make a charge to the profit and loss statement ("provision") to create a loan loss reserve that is shown on the balance sheet. When the full amount of principal and interest on the loan becomes uncollectible, the loan balance is reduced through a charge to the loan loss reserve.

Credit risk assessment and supervisory requirements

The importance of loan grading schemes

Loan loss provisioning levels and the adequacy of the reserve are only as good as the methodology used to estimate losses in the loan portfolio. A loan grading scheme assigns each loan a grade that reflects its probability of default. Loans in one of the lower credit quality grades are often referred to as "non-performing loans" (NPLs), although the precise definition of what constitutes an NPL differs across countries and time.[3] An inadequate loan grading scheme undermines the provisioning process and leads to distortions in a bank's balance sheet and an overstatement of capital and capital ratios.

Loan loss reserves should reflect not only the probability of default, but also the amount the lender can recover in case of default. An important source of repayment in such an event is collateral. As the likelihood of default increases and the assigned loan grade worsens, the value of the collateral becomes more important. More specifically, it has a direct impact on the loss that a bank suffers in the event of default and the amount for which it must provision.

It is good practice to revalue collateral periodically, particularly when markets are volatile, the borrower's circumstances change or the terms of the loan are materially altered. The valuation should be performed by an independent expert and reviewed internally. Various approaches can be used to value collateral, and in the case of real estate the method will depend to some extent on the use and type of property (eg residential real estate is typically valued using a market comparable approach, whereas an income approach is frequently applied to commercial real estate). While the result is a current market value, an approach based upon estimated future income

[3] For example, in some countries any loan that is delinquent more than 30 days would be considered an NPL while in other systems the designation may only apply to loans that are 90 days past due. In still other jurisdictions (eg Hong Kong SAR), the adoption of IAS 39 and its use of an "impairment" test has led to the NPL designation being abandoned.

streams will necessarily consider possible future changes in the business climate and the economy.

Since collateral can take many forms, the ease and accuracy with which it can be valued, and the legal ability to take possession and to liquidate it, vary. Thus, when considering collateral in the provisioning process, its value is discounted by some percentage to reflect these factors. In many emerging markets, where real estate is the predominant form of collateral, these aspects become even more important.

For each loan, after determining the probability of default and considering any collateral value, a bank makes an appropriate provision. In a number of jurisdictions, including many in Asia, supervisors prescribe the minimum level at which the reserve must be maintained based upon pre-defined supervisory credit risk grades that are assigned to loans and give an indication as to the probability of default. It should be recognised, however, that there is considerable variation in expected losses among loans of the same grade and it is possible that some loans may require a reserve below the supervisory minimum.

Accounting issues

Provisions should be forward-looking ...

From a risk management and supervisory point of view, provisions should be forward-looking, ie they should reflect losses that are expected during the remaining life of the loan. However, accounting standards require that financial statements present the position of a reporting entity as of the date of the financial statements and be based upon known events, rather than possible future events. More specifically, International Accounting Standard (IAS) 39 recognises loans as being impaired when there is objective evidence that, since the date that the loan was recorded as an asset in the bank's financial statements, one or more events have occurred that will have an impact on the estimated future cash flows of the loan.[4] The balance sheet amount of the loan should be reduced by the amount of impairment through the creation of a loan loss reserve on the balance sheet. Specific reserves are made for individually assessed loans that are found to be impaired, while a collective assessment reserve can be established for individually significant loans for which impairment is not identified, and those that, because of their small size, are impractical to individually assess.

... but IAS 39 is an "incurred loss model"

The fact that IAS 39 requires one or more loss events to have occurred before a reserve can be established has led to it being referred to as an "incurred loss model". This approach has been criticised for only permitting loan losses to be recognised fairly late in the credit cycle and for being, as a consequence, procyclical in nature.

In response to the global financial crisis, in April 2009 the Financial Stability Forum (now the Financial Stability Board (FSB)) recommended that accounting standard setters consider alternative models for loan losses that

[4] Since its issuance in 1998, IAS 39 has been amended several times and in 2010 will be replaced with a simpler standard that includes a changed methodology for identifying and measuring the amount of loan losses and the corresponding amount of reserves that should be established.

would permit their recognition earlier in the credit cycle, thereby reducing procyclicality in loan provisioning (FSF (2009)).[5]

Transparency and disclosures provide readers of financial statements with information about an entity's risk profile and risk management process. In the context of loan provisioning, disclosures push banks to adopt and implement policies that result in reserves being maintained at an adequate level and losses being recognised in a timely manner. As such, they are a critical part of the overall provisioning framework. The disclosure requirements for loan loss reserves and provisions are largely contained in International Financial Reporting Standard (IFRS) 7 (IASB (2009b)) and Pillar 3 of the Basel II capital framework.

Loan loss reserves and regulatory capital

Loan loss reserves and regulatory capital are linked

Loan loss reserves and supervisory capital requirements based upon the level of risk in a bank's financial positions are directly linked. In particular, for regulatory capital, loan loss reserves are intended to cover losses that are expected to occur based upon historical experience adjusted for changes in the economic environment. Losses above this level are "unexpected" and are covered by capital.

Both the Basel I and Basel II capital regimes allow loan loss reserves to be included in regulatory capital, up to certain limits. To encourage more forward-looking provisioning methodologies (ie making provisions earlier in the credit cycle) and more robust levels of reserves than have traditionally been maintained, policymakers are re-evaluating these limits. Some would argue that these approaches, which to some extent rely on subjective inputs, may provide opportunities for banks to manage earnings and capital without proper regard to the underlying conditions. A balance must be struck.

Loan loss provisioning regimes in Asia[6]

In the aftermath of the Asian financial crisis of the late 1990s, many Asian central banks and supervisory authorities tightened their prudential supervision to ensure that banks established reserves at a level commensurate with the level of risk in the loan portfolio in a timely manner (Table 1). Many of these moves involved convergence with internationally accepted norms: some regulatory authorities strengthened loan grading and provisioning schemes,

[5] Following the recommendation from the FSF, in June 2009 the International Accounting Standards Board (IASB) issued a Request for Information on an expected cash flow approach. Generally speaking, the expected cash flow approach requires that an entity continually re-estimate expected cash flows and does not use a trigger event as the basis for establishing a reserve. If higher levels of loan defaults are envisaged in the future, regardless of whether a trigger event has occurred, the relevant cash flows will be adjusted downwards and a reserve for the corresponding amount established.

[6] Unless otherwise stated, information presented in this section has been obtained from supervisory rules and regulations published on the websites of supervisory authorities in the relevant jurisdiction.

Provisioning practices in selected jurisdictions

	CN	HK	ID	IN	KR	MY	PH	SG	TH
Convergence with international standards									
General provisions†	✓	✓ [1]	✓	✓ [2]	✓	✓	✓	✓	✓
Adoption of IAS 39	✓ [3]	✓ [4]			✓ [5]	✓ [5]	✓ [4]	✓ [4]	✓ [5]
Strengthening loan classifications			✓ [6]	✓ [6]					
National discretion									
Increase in specific provisions	✓ [7]				✓				
Increase in general provisions	✓ [7]			✓	✓				
Differences by industry sector				✓	✓				
"Expected loss" considerations	✓				✓ [8]				
Issues of capital and incentives††									
Tax deductibility	✓ [9]	✓ [10]	na	✓ [10]	✓ [10]	✓ [10]		✓ [11]	✓ [10]
Capital allocation	✓	✓ [12]	na	✓ [13]	✓ [13]	na	✓ [14]	✓ [12]	✓ [12]

CN = China; HK = Hong Kong SAR; ID = Indonesia; IN = India; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand. ✓ = yes; blank space = no; na = not available.

Reflects available public information up to September 2009.

[1] The Hong Kong Monetary Authority established a Regulatory Reserve without a imposing a minimum level, but stated that banks are expected to maintain a regulatory reserve of between 0.5% and 1% of total loans. [2] In addition to general provisions, prudential norms require banks to create a "floating provision" which can only be used for predefined contingencies and under extraordinary circumstances as determined by the board; moreover, it may only be used for specific provisions and with prior approval from the Reserve Bank of India. [3] IAS 39 was implemented by all listed banks on 1 January 2007, and in 2009 for all other banks. [4] Effective since 2005. [5] Full implementation will occur in 2010, 2011 and 2013 for Malaysia, Korea and Thailand, respectively. [6] Reducing the number of days past due to assign an adverse supervisory loan grade (ie substandard or below). [7] Raising the NPL coverage ratio to a minimum of 150% by end-2009. [8] Based on forward-looking criteria which consider the borrower's business and operational environment, financial condition and future cash flow projection. [9] General provisions are tax deductible. [10] Specific provisions are tax deductible. [11] General provisions are tax deductible up to a maximum of 3% of qualifying loans and investments. [12] Aggregate of regulatory reserves and collective impairment allowance are allowed to be included in Tier 2 capital up to a maximum of 1.25% of risk-weighted assets. [13] General provisions may be included in Tier 2 capital up to a maximum of 1.25% of risk-weighted assets. [14] General provisions are allowed to be included in Tier 2 capital up to a maximum of 1% of risk-weighted assets. † Enhancements for prudential requirements for general provisions. †† Information in this section is drawn from World Bank, *Bank loan classification and provisioning practices in selected developed and emerging countries (A survey of current practices in countries represented on the Basel Core Principal Liaison Group)*, June 2002; and J Barth, G Caprio and R Levine, *Bank regulation and supervision database*, World Bank, 2008.

Sources: National data. Table 1

while others converged their accounting regimes with IFRS, including IAS 39, or announced plans to do so.

Authorities in the Asian region also adopted measures on a discretionary basis to encourage the build-up of loan loss reserves in good times. In some jurisdictions, they increased the level of reserves required in cyclical sectors; in others, they issued explicit instructions to take into account "expected loss" considerations.

At the same time, significant heterogeneity remains. Not all jurisdictions are converging with IAS 39. The treatment of collateral differs, as does the tax deductibility of provisions or the inclusion of reserves in capital. Even among those jurisdictions that have adopted IAS 39, most impose additional provisioning and reserve requirements. What follow are country-specific descriptions of the salient features of loan loss provisioning regimes in nine Asian jurisdictions.

China has raised reserve/NPL ratios

China. Banks in China have been required to set aside general reserves of at least 1% of loans outstanding since 2005. Effective 2002, as part of a

broader convergence with international practices, loan classification rules were revised such that specific reserves were mandated for the four lowest grades.[7] Prudential guidelines allow banks to establish specific reserves for loans graded either substandard or doubtful which are 20% greater or less than the prudential norm. Factors considered when determining the appropriate level of reserves include specific risk scenarios (which may vary by region or industry), probability of losses and historical experience. Further steps by the China Banking Regulatory Commission (CBRC) to ensure adequate reserve levels include statements encouraging banks to raise their ratios of total reserves to NPLs to 150% by the end of 2009. This recommendation is intended to provide sufficient coverage not only for currently identified problem loans but also for a potential increase in NPLs owing to the significant loan growth experiences in the first half of 2009.

Hong Kong institutes "regulatory reserves"

Hong Kong SAR. Hong Kong implemented IAS 39 in 2005. As a result, loan provisions are made when objective evidence of impairment occurs. As an additional measure, to ensure that level of protection for expected credit losses does not decline, financial institutions are expected to maintain a "regulatory reserve" of approximately 0.5–1% of total loans to cover losses which may occur in the future. The regulatory reserve is an "earmarked" amount in retained earnings and is therefore distinct from loan loss reserves. The Hong Kong Monetary Authority expects that the regulatory reserve should approximate the difference between the sum of general and specific reserves that would have been established prior to the implementation of IAS 39, and the level of reserves required after its implementation.

India. Over the past decade, loan classification standards in India have become more conservative and have moved closer to international norms.[8] To this end, India has raised its benchmark general provision level for standard loans (from 0.25% to 0.40% in 2005), noting the need "to build up provisioning to cushion banks' balance sheets in the event of a downturn in the economy". Required reserve levels also consider collateral.

India varies required general provisions by industry sector

The Reserve Bank of India (RBI) applies a sector-specific approach to general provisions based on the riskiness of the sector and public policy objectives. For instance, required reserve levels for performing personal loans, residential housing loans above INR 20 million, and credit card, capital market-related and commercial real estate loans were increased from 0.40% to 1.0% in 2006. Again in 2007, the RBI raised general provisions for personal loans, capital market exposures and commercial real estate loans from 1% to 2%, and increased provisioning requirements for banks' exposure to systemically important non-deposit-taking non-banking finance companies from 0.4% to 2%. The RBI stated that higher requirements were a response to continued high credit growth and higher default rates. Conversely, provisioning requirements

[7] The guidance on general reserves became effective 1 January 2002, with a final implementation date of 2005. The first introduction of a loan classification system in China dates back to 1998, with implementation required by 2002.

[8] In 2004, the definition of an NPL was changed from 180 to 90 days past due.

for performing loans to the agricultural and SME sectors are exempted from the additional provisioning requirements enacted in 2005.

Indonesia. Bank Indonesia (BI) adopted a prudential loan classification scheme with five grades in December 1998, and later tightened the definition for each grade in 2005. BI permits provisions to be made net of collateral, with the appraised value of collateral reduced according to the age of the appraisal (ie older appraisals result in a greater discount to the appraised value of the collateral). General provisions of no less than 1% of loans are required, though the requirement can be waived if the loan is secured by high-quality collateral such as cash or gold.

Korea also varies requirements by sector

Korea. Korea has tightened provisioning norms on numerous occasions over the past decade. The general reserve requirement for corporate loans was increased to 0.5%, 0.7% and 0.85% in 1999, 2005 and 2007, respectively. The minimum reserve levels for other categories of loans were also raised. Sectoral differences in provisioning requirements are also enforced, with higher provisioning requirements for residential housing and credit card loans relative to corporate loans in place since December 2006.[9] In addition to the sectoral differences, Korean prudential authorities explicitly incorporate "expected loss" considerations into their guidance on provisions: local banks, when assessing the loan classification, are required to apply "forward-looking criteria", including future cash flow projections, when determining an appropriate level of reserves. Korea plans to complete adoption of IAS 39 in 2011.

Malaysia. In the wake of the Asian crisis, the Central Bank of Malaysia increased its reserve requirements for various prudential loan grades. For example, until March 1998, no specific reserve level was required for loans graded substandard, while 50% and 100% were required for doubtful and loss loans, respectively. From March 1998, a 20% requirement for substandard loans (net of collateral)[10] was introduced[11] and general reserve levels were increased to 1.5% of total loans. Malaysia plans to implement IAS 39 by 2010.

Philippines. The Philippines adopted new accounting standards in 2005 in line with IFRS and the loan impairment criteria contained in IAS 39. For financial institutions, however, the Bangko Sentral ng Pilipinas (BSP) requires that reserve levels be maintained in accordance with IAS 39 or BSP guidelines, whichever results in a higher reserve. The BSP's requirements include a general provision for loans without heightened credit risk characteristics of 1% and 5% for those that were previously restructured. Specific reserves are determined based upon the particular loan grade assigned.

Singapore. As in Hong Kong and the Philippines, IAS 39 became effective in Singapore in 2005. Banks that are not yet compliant with IAS 39 must maintain a minimum specific reserve level based upon the supervisory loan

---

[9] For example, general provisions of 0.85%, 1.0% and 1.5% are required for corporate, housing and credit card loans, respectively.

[10] Real estate is valued using a forced sales price for the property as it is currently being used.

[11] Though temporarily repealed as part of a stimulus package in September 1998, it was reinstated in March 1999.

grade. Though there is no specific guidance on general provisions, the Monetary Authority of Singapore (MAS) states that as a "transitional arrangement" the level should be maintained at not less than 1% of loans net of collateral values.[12] All minimum provision levels are net of collateral.[13]

Thailand has increased loan loss reserve requirements

Thailand. In 1998, Thailand significantly increased the minimum loan loss reserves required for the various supervisory loan grades, with the requirements applied net of collateral value. In 2006 and 2007, in order to mitigate the impact of a convergence with IAS 39, which is expected to take place over the next few years, the Bank of Thailand (BoT) further tightened provisioning standards for all loans graded substandard or below such that they are consistent with IAS 39. As a result, for these loans, a reserve equalling 100% of the difference between the balance sheet amount of the loan and the present value of expected cash flows from the debtor or the sale of collateral must be established. It is worth noting that the BoT has not yet fully applied IAS 39 to performing and so-called special mention loans, where provisions of 1% and 2% are required against loans net of collateral, respectively.[14] All banks are expected to be fully compliant with IAS 39 by 2013.

In summary, a number of measures taken by supervisors in Asia over the past 10 years have resulted in banks maintaining higher levels of loan loss reserves in relation to total loans during a period when many jurisdictions have been experiencing economic growth and declining levels of NPLs.

In three of the countries discussed above, authorities adopted measures on a discretionary basis to respond to increasing levels of risk (Table 1). Authorities in India and Korea, for example, increased their loan loss reserve requirements on several occasions in sectors experiencing rapid credit growth. China's recommendation that banks maintain a loan loss reserve to NPL ratio of 150% is another measure that has resulted in the establishment of reserves in advance of an identifiable deterioration in credit quality.

The process of convergence with international accounting standards has been managed so as to ensure increased provisioning standards ahead of the full implementation of IAS 39. But when the process has threatened to reduce loan loss reserve levels, a number of authorities have instituted additional provisioning requirements, maintained existing measures on a provisional basis (Philippines) or created a special regulatory reserve account (Hong Kong SAR).

---

[12] According to MAS Notice 612, banks without a sufficiently robust loss estimation process or loan loss data of sufficient quality over a full credit cycle must comply with this provisioning rule for prudential purposes.

[13] MAS guidelines state that banks should apply, where appropriate, a haircut to the valuation of collateral or use the forced sale value to provide a more realistic estimate of the net realisable value of the collateral.

[14] BoT guidelines permit banks that are ready in terms of data and methodology to collectively assess performing and special mention loan portfolios and establish a reserve according to IAS 39.

Observed provisioning practices in Asia

This section examines the evolution of reserves and provisions[15] in Asia, starting with the aftermath of the Asian financial crisis of the late 1990s and concluding with the onset of sharp recessions in several Asian economies in late 2008. Did the shift towards more conservative provisioning regimes, documented above, result in a noticeable increase in reserve levels and annual provisions relative to total loans or total NPLs in the system? Did the adoption of discretionary measures by a subset of countries result in observable increases in reserves and provisions? What has been the relation of provisioning expenses to macro variables such as GDP and credit growth?

Yearly system-level data

To investigate these questions, we have collected yearly system-level data for each of the jurisdictions discussed above for the period 1998–2008. Our dataset includes total loans, non-performing loans, provision expenses, reserve levels, real GDP and loan growth. For China, the data are from 2003 and do not include provision expenses. For three of the economies – Hong Kong SAR, Korea and Thailand – we have data from 1995, several years prior to the start of the Asian financial crisis.

In Graph 1, we chart over the past 5–15 years the available data for the levels of provision expenses, as well as the stock of reserves and non-performing loans (all as a percentage of outstanding loans) for nine jurisdictions. In Graph 2, we present two macro variables (real GDP and loan growth) along with provisions and reserves, but this time as a percentage of NPLs.

Reserves have fallen much less than NPLs

For all of the economies in our sample, non-performing loans have fallen since the Asian financial crisis, while reserve levels (and provisions) have gone down at a much more subdued pace (Graph 1). In China, Hong Kong SAR, Korea, Malaysia and Singapore, the level of reserves went from being well below to being well above that of NPLs. Accordingly, the ratios of reserves to NPLs have increased over the decade for nearly all the economies in the sample (Graph 2), consistent with more conservative provisioning policies.[16]

Provisions and reserves greater than before the Asian financial crisis …

In the jurisdictions for which data are available from the mid-1990s, it appears that the stock of reserves as well as the flow of annual provisioning expenses are greater now than they were before the crisis that started in 1997. In Korea, reserves represent a larger proportion of loans than before the Asian financial crisis, despite the fact that the ratio of NPLs to loans declined from around 5% in 1995 to less than 1% in 2008. In Thailand, provisioning as a

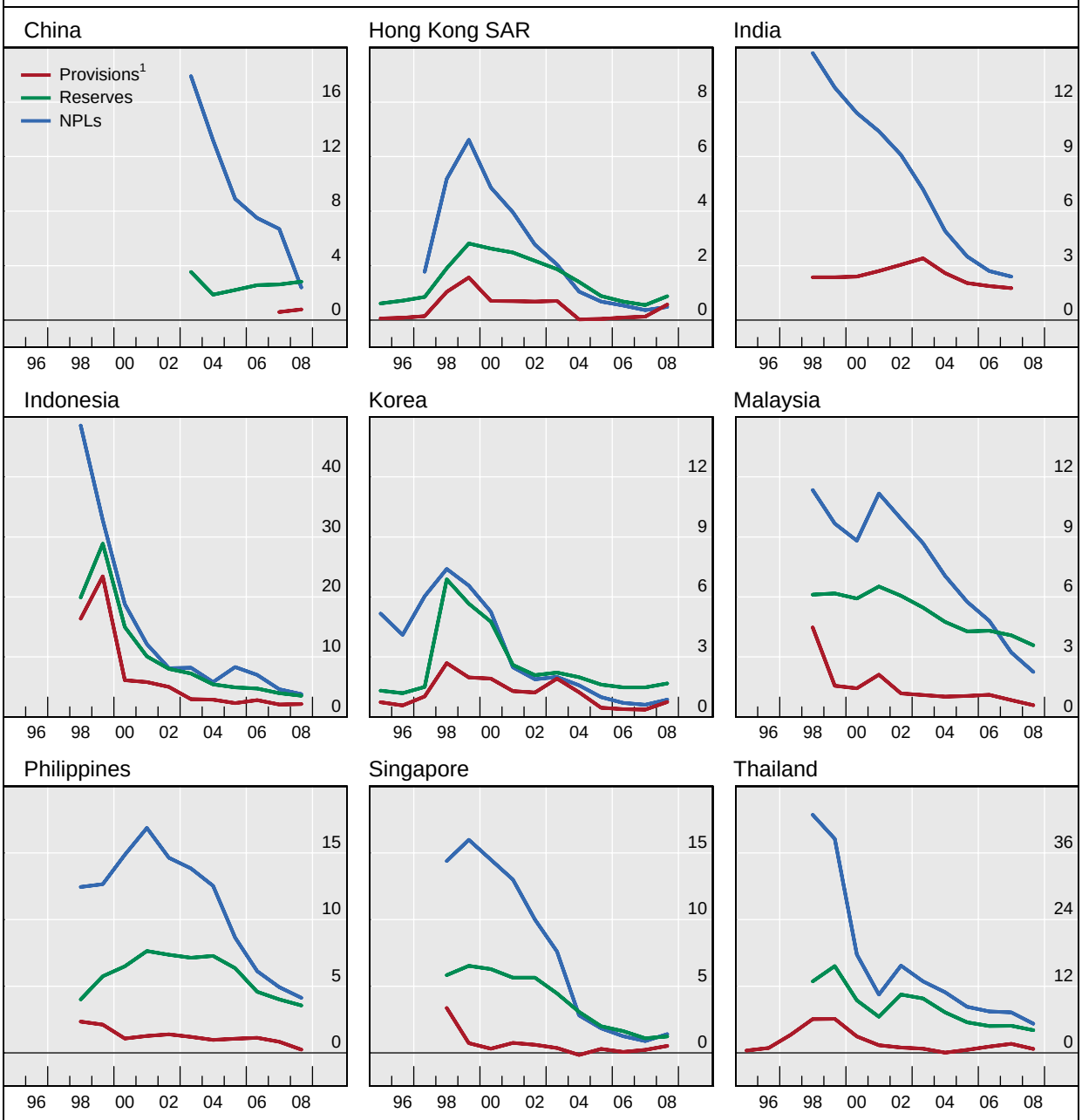
[15] While reserves (as the stock variable) are the best measure of the degree of cumulated provisions against which losses can be charged, provisioning expenses (which are not affected by changes to reserves due to charge-offs) can be of independent value in assessing the impact of changes in a provisioning regime. In some cases, we have provisioning expenses data but do not have reserve data.

[16] While the definition of NPLs does differ somewhat from country to country, whenever the definition has changed for any country during the period, it has only become more conservative, to include more problem loans. Thus, the increasing trend in the ratio of reserves to NPLs would be amplified were we able to correct for such changes in definition. The steady increase in reserve to NPL ratios can also be interpreted as reserves being clearly insufficient in the aftermath of the Asian financial crisis of the late 1990s.

proportion of loans has been higher over the past few years than it was in 1995 (pre-crisis NPL and reserve data are not available in the Thai case). In Hong Kong SAR, reserve levels are similar to or greater than those before the crisis, and provisions as a fraction of loans averaged 0.31% between 2003 and 2008 (0.11% in 2006 and 2007 alone), compared to 0.07% in 1995 and 1996. This is despite the fact that the annual provisioning and stock of reserves for

Provisions, reserves and NPLs in relation to total loans

As a percentage of total loans

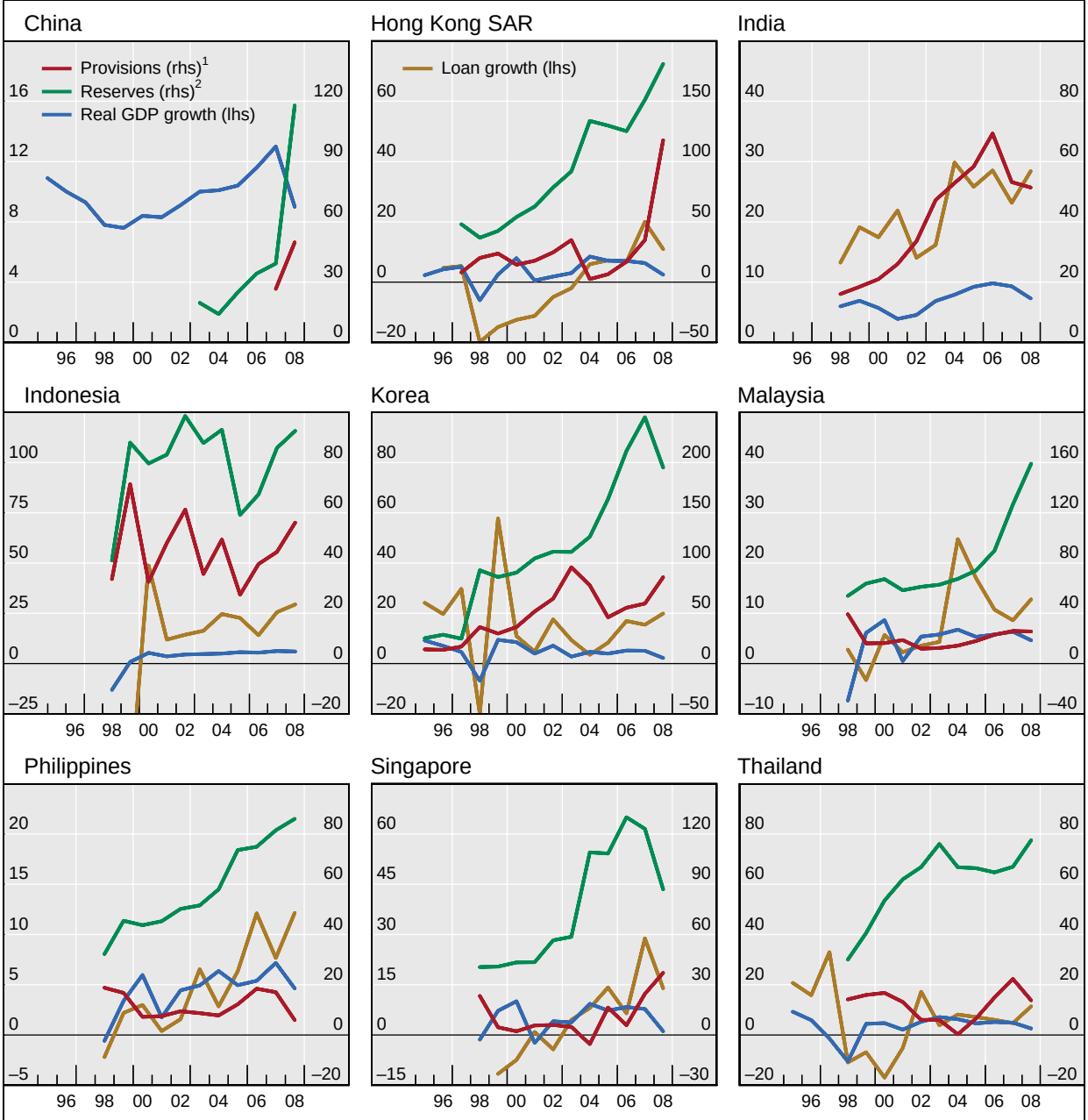


[1] Provision expenses in a given period can be negative if a bank determines that its overall level of reserves is too high in relation to the level of credit risk in the loan portfolio. In such cases, the reserve is reduced through a negative provision expense that has the effect of increasing earnings and, by extension, capital.

Sources: CEIC; national data; BIS calculations. Graph 1

Provisions and reserves in relation to NPLs and macro variables

In per cent



[1] Loan loss provisions as a share of NPLs. Regarding negative provision expenses, see Graph 1. [2] Loan loss reserves as a share of NPLs.

Sources: CEIC; national data; BIS calculations. Graph 2

provisioning data do *not* include the additions to the regulatory reserves that started from 2005 as described in the second section.

... in part due to the discretionary tightening of standards

The discretionary tightening of standards identified above appears to have had a measurable effect in most cases. In Korea, where higher general as well as sectoral provisioning requirements came into effect from the mid-2000s, provisions stopped declining sharply as a share of total loans in 2005, and rose

Provisioning and financial system procyclicality

Research on loan loss provisioning used to focus narrowly from an accounting perspective on whether provisions were used by banks to smooth earnings (Greenawalt and Sinkey (1988)). More recently, work has focused on provisions' contribution to the procyclicality of financial systems by virtue of being lower when output and credit are expanding and higher in periods of contraction. In early work from this perspective, Borio et al (2001) document a strong negative correlation of bank provisions with the business cycle for 10 OECD countries. Subsequent empirical studies have used bank-level information to investigate the procyclicality of loan loss provisions in more detail (Cavallo and Majnoni (2002), Laeven and Majnoni (2003), Davis and Zhu (2005), Bikker and Metzemakers (2005), Bouvatier and Lepetit (2008)). Researchers use regression analysis to explain annual provisioning expenses, usually scaled by the total stock of loans or assets of the bank. Some of the explanatory variables used in these studies are discussed below.

GDP and *credit growth.* Provisioning expenses are found to vary negatively with the business cycle (real GDP growth) as well as credit growth. The latter result is consistent with provisions declining even as surges in new loans might indicate increased riskiness. Of the four studies that include both variables simultaneously, three find significantly negative coefficients on both; when only one or the other is included in other studies, it is invariably negative.

Earnings. If banks use provisions to smooth earnings, there should be a positive relationship between provisions and earnings. Evidence of the existence of earnings smoothing through provisions remains fairly strong, at least for industrialised countries. In a few papers, provisions are found to vary inversely with earnings when they are negative, which would contribute to procyclicality. Meanwhile, studies on emerging markets have not found evidence for earnings smoothing; in fact, earnings have been found to negatively affect provisioning in emerging Asia.

Capital ratio. Higher provisioning when capital is low is consistent with capital depletion being correlated with efforts to build up a greater reserve cushion. However, studies do not document a strong association with capital constraints and provisioning. In two of the four studies in which capital is included as an explanatory variable, there is no significant impact of capital on provisioning; in the other two studies the impact is of opposite signs.

Asset prices. Provisioning may be lower when asset prices are rising, if the latter are reflected in collateral valuations. (Changed expectations about future fundamentals are another channel.) Davis and Zhu (2005) find that provisions are lower when commercial property prices are rising. This suggests that provisioning may amplify credit cycles through the collateral channel.

The most ambitious study focusing on Asia is that of Craig et al (2006), who investigate the provisioning decisions of 300 Asian banks between 1996 and 2003. Their findings are consistent with the view that provisioning practices in Asia exacerbated financial system procyclicality more than in other regions. Higher real GDP, loan growth, asset prices and earnings led to lower provisions. To be sure, these results were probably driven by the collapse in many variables during the Asian financial crisis, when provisions needed to be increased.

Provisions in Asia (1998–2008)[1]

Variable	1998–2008	1998–2002	2003–08
GDP growth	–0.09*	–0.02	–0.11*
Loan growth	–0.05*	–0.04*	–0.01
Earnings	–0.96*	–2.95*	0.19
Capital	–0.39*	–0.10	0.05
Property prices		0.01	0.01
Observations	77	23	38
Adjusted R-squared	0.89	0.86	0.81

[1] The dependent variable is loan loss provisions to total loans. The results are based on panel regressions with country fixed effect panel annual data during 1998–2008 (and subperiods) of Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. GDP growth is real GDP in local currency. Loan growth refers to year-on-year changes in gross loans. Property prices are the annual change in real house prices. Earnings are profits before tax and provisions divided by total assets. Capital is total capital adequacy ratio. * shows significance of test statistic at 95% level.

Sources: Bloomberg; CEIC; national sources; BIS calculations. The authors thank the national authorities that contributed data to this study. Table A

Table A shows a preliminary attempt to explore the degree to which provisioning has been countercyclical in eight Asian countries, using system-wide data only, over 1998–2008. Regressions using annual data incorporating fixed country effects are reported above. Like Craig et al, we find over the full period that GDP and credit growth, earnings and capital are related to provisioning in a way that may exacerbate financial system procyclicality. However, when estimated over the more recent period only (2003–08), while GDP growth is statistically significant, other variables lose their significance. This suggests that many of the earlier results may have been driven by the behaviour of the variables around the Asian financial crisis of the late 1990s, and may not represent current provisioning practice. However, the paucity of observations and the lack of a full cycle in either subperiod limits the strength of any inferences to be drawn from the comparison.

relative to NPLs, as did reserves (Graph 1). In China as well, reserves have risen as a proportion of loans even as NPLs have declined, with the most recent marked increase in reserve/NPL ratio converging towards CBRC guidelines (Graph 2).

At the same time, the process of convergence with international accounting standards identified in the Thai case also resulted in higher provisioning. The tighter standards implemented in 2006 and 2007 resulted in higher provisions relative to loans compared to previous years, despite declining NPLs.

In India, the one other case where the authorities acted to increase provisioning in a discretionary fashion, the general improvement in credit quality was the more dominant factor in determining the overall level of provisioning. Despite the stricter requirements adopted by the authorities described above, the rate of provisions as a proportion of total loans has steadily declined since 2003 (Graph 1).[17]

Provisioning is still responsive to the business cycle

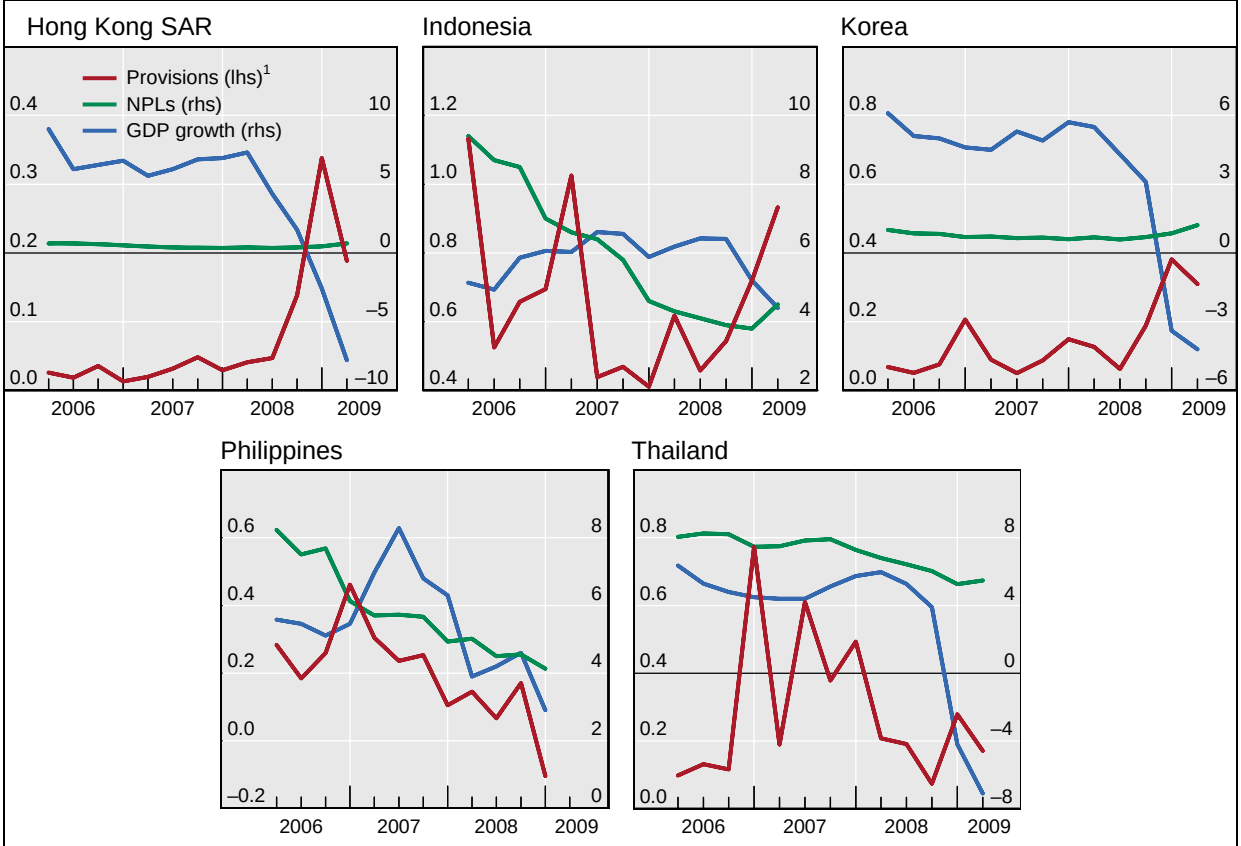
More recently, provisions have risen in some economies, reflecting a deterioration of economic conditions. Provisions have increased most sharply in those jurisdictions recording an increase in NPLs: Hong Kong SAR, Indonesia, Korea and Singapore (Graphs 1 and 3).[18] This probably reflects the fact that the decline in GDP growth (from peak to trough) has generally been the sharpest in those economies. In this sense, changes in provisioning regimes since the Asian financial crisis of the late 1990s have retained a degree of responsiveness to the business cycle. Indeed, in panel regressions, even when estimated over just the past six years (2003–08), GDP growth remains an important explanatory factor, though the relationship between provisioning and other factors that might amplify procyclicality, such as credit growth and earnings, appears to be less strong in the recent period than before (see box).

[17] To be sure, this was during a period of extremely high loan growth (levels over 20% from 2005), so provisions have still grown in absolute terms, and relative to NPLs. The high growth of credit may also account for declining provisions as a percentage of loans, given that it takes time for loans to go sour (the "seasoning effect").

[18] The fact that increases in NPLs are observed only for these economies is not merely a case of the low frequency of the annual data: for the five economies for which quarterly data through the first quarter of 2009 are available (which do not include Singapore), an increase in the ratio of NPLs to total loans is only apparent in Hong Kong SAR and Korea (Graph 3).

Provisions and NPLs in relation to total loans and GDP growth

In per cent



[1] Regarding negative provision expenses, see Graph 1.

Sources: CEIC; national data; BIS calculations.

Graph 3

Conclusion

In the wake of the Asian financial crisis, most jurisdictions in emerging Asia adopted stricter provisioning practices and began the process of converging with international accounting standards. While the incurred loss approach in those standards could have led to lower levels of provisioning and reserves for loan losses, a number of regimes overlay additional prudential provisioning requirements. A number of jurisdictions also adopted discretionary measures to increase provisioning in good times in response to rising levels of risk. As a result, levels of provisioning and reserves over the past few years generally appear to be higher, and banking systems more resilient, than before the Asian financial crisis a decade ago.

References

Basel Committee on Banking Supervision (2006): *Sound credit risk assessment and valuation for loans*, June.

Bikker, J A and P Metzemakers (2005): "Bank provisioning behaviour and procyclicality", *Journal of International Financial Markets, Institutions and Money*, vol 15, pp 29–51.

Borio, C, C Furfine and P Lowe (2001): "Procyclicality of the financial system and financial stability: issues and policy options", *BIS Papers*, no 1.

Borio, C and P Lowe (2002): "To provision or not to provision", *BIS Quarterly Review*, March, pp 29–46.

Bouvatier, V and L Lepetit (2008): "Banks' procyclical behaviour: does provisioning matter?", J*ournal of International Financial Markets, Institutions and Money*, vol 18, pp 513–26.

Cavallo, M and G Majnoni (2002): "Do banks provision for bad loans in good times? Empirical evidence and policy implications", in R Levich, G Majnoni and C Reinhart (eds), *Ratings, rating agencies and the global financial system*, pp 319–42.

Craig, R S, E P Davis and A G Pascual (2006): "Sources of procyclicality in East Asian financial systems", in S Gerlach and P Gruenwald (eds), *Procyclicality of Financial Systems in Asia*, pp 55–123.

Davis, E P and H Zhu (2005): "Commercial property prices and bank performance", *BIS Working Papers*, no 175, pp 1–37.

Financial Stability Forum (2009)*: Report of the Financial Stability Forum on addressing procyclicality in the financial system*, April.

Greenawalt, M B and J F Sinkey (1988): "Bank loan-loss provisions and the income-smoothing hypothesis: an empirical analysis, 1976–1984", *Journal of Financial Services Research*, vol 1, no 4, pp 301–18.

International Accounting Standards Board (2009a): *Request for Information, Financial Instruments: Impairment of Financial Assets*, June.

——— (2009b, as amended): *International Financial Reporting Standard 7, Financial Instruments: Disclosures*, March.

——— (2009c, as amended): *International Accounting Standard 39, Financial Instruments: Recognition and Measurement*, April.

Laeven, C and G Majnoni (2003): "Loan loss provisioning and economic slowdowns: too much, too late?", *Journal of Financial Intermediation*, vol 12, pp 178–97.

Li, Grace (2009): "A comparison of loan loss allowance practices in Asia", *Asia Focus*, Federal Reserve Bank of San Francisco, June.