

III. THE LIKELY EFFECT ON ASIA OF A SHARP DELEVERAGING BY EUROPEAN BANKS

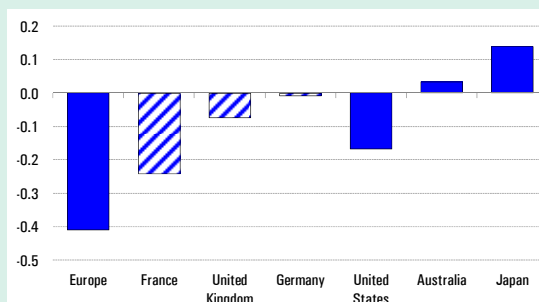
The growth of bank credit in Asia has been robust in recent years as highlighted in Chapter 1, and generally healthy bank balance sheets have helped buffer the region against the gradual deleveraging by European banks that has occurred so far. Nevertheless, Asia is potentially vulnerable to a large shock to foreign funding of the kind that occurred during the 2008 crisis.

European banks play an important role in supplying credit to several Asian economies. With the euro area experiencing financial turmoil, these banks could pare back foreign assets, as described in the April 2012 *Global Financial Stability Report* (IMF, 2012b). A sharp deleveraging arising from an intensification of the euro area crisis could potentially cause a shock to credit supply in Asia. Such a credit crunch could arise from a withdrawal of wholesale funding to the domestic banking sector—and associated derivatives markets—or through a direct reduction in credit supply to the nonbank private sector.

Recently released data show that European banks have already started deleveraging from Asia, although this has been partially offset by regional banks stepping in (Figure 3.1). Under the baseline scenario, the deleveraging is expected to be orderly and much of it is expected to occur through asset sales rather than lower credit provision. Moreover, the European Central Bank’s three-year long-term refinancing operations have alleviated funding difficulties for euro area banks. But if the euro area crisis reescalates, there is a risk that the deleveraging process could gather momentum and become a disorderly rush for the exits.

This chapter first explores Asia’s reliance on European banks and the extent to which a large retrenchment by those banks could affect credit supply in Asia. It then proceeds by examining the last episode during which there was a dramatic retrenchment by

Figure 3.1. Consolidated Foreign Claims of European and U.S. Banks on Emerging Asia¹
(Change since previous quarter in percent of Emerging Asia GDP)



Sources: Bank for International Settlements; CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.
¹ Claims are on immediate borrower basis as of 2011:Q3. Uses sum of quarterly GDP in U.S. dollars between 2010:Q4 and 2011:Q3 in the denominator for Emerging Asia.

foreign banks. In 2008—a year that encompassed both the Bear Stearns sale and the Lehman Brothers bankruptcy—global banks heavily pared back foreign assets worldwide, affecting credit supply in a broad sample of recipient economies. Although the credit supply response in Asia was significant, it was only about half the size of that in other regions, reflecting greater policy space and healthier bank balance sheets in Asia at the outset of the crisis. The chapter concludes with policy implications that can be drawn for a potential future shock originating in the euro area.

A. The Role of European Banks in Asia

Asian liabilities to European banks are substantial, when measured as the consolidated foreign claims of European banks in percent of recipient-country GDP, but with considerable variation across economies (see Chapter 1).¹ Australia, Hong Kong SAR, Korea, New Zealand, Singapore, and Taiwan Province of China are the largest borrowers from European banks, while China, India, and the ASEAN countries generally have smaller liabilities. The regional pattern is broadly

Note: The main authors of this chapter are Shekhar Aiyar and Sonali Jain-Chandra, with research assistance from Souvik Gupta and Hye Sun Kim.

¹ Consolidated foreign claims include both cross-border credit and credit extended by the local subsidiaries and branches of European banks.

similar if European bank claims are scaled by domestic credit to the private sector (rather than GDP). The liabilities of countries with deep banking systems like Australia and New Zealand are somewhat reduced by this measure, while those of some ASEAN countries, like Indonesia and the Philippines, are higher. In several Asian economies, lending by local subsidiaries and branches is a large part of overall European bank claims, and to the extent that these claims are funded by local deposits, they are less subject to deleveraging pressures. The financial centers, Hong Kong SAR and Singapore, which play a regional intermediating role, have much higher liabilities to European banks than do other regions of the world, with the exception of emerging Europe (which is far more interlinked with the euro area).

Among European banks, U.K. banks have a particularly significant presence in the region. To some extent the large local deposit base of banks such as HSBC and Standard Chartered helps insulate them from funding pressures originating in the euro area.² Anecdotal evidence suggests that they may even view a relatively orderly deleveraging by euro area banks as an opportunity to increase market share in Asia. But in a deeper crisis characterized by severe stresses in interbank and other funding markets, U.K. banks are likely to join others in retrenching foreign assets—as was the case during the 2008 crisis—with considerable impact on the region.

For most economies in the region, the nonbank private sector—businesses and households—is the main recipient of credit from foreign banks as a whole (Figure 3.2). Trade credit may be particularly vulnerable to deleveraging, given the prominent role of European banks in this area (Figure 3.3). Moreover, European banks tend to specialize in complex project financing, which would not be easy to substitute quickly with other sources of credit. SMEs may suffer disproportionately when credit is rationed, and syndicated loans may be squeezed.³ The banking

sectors of Australia, Hong Kong SAR, Korea, New Zealand, Singapore, and Taiwan Province of China have the largest liabilities to European banks—likely comprising wholesale funding—making them relatively more vulnerable to deleveraging through the financial system (Figure 3.2).

B. What Happened during the Lehman Crisis?

The sharp deleveraging that occurred from 2008 onward provides a natural benchmark to analyze the impact of future steep deleveraging by European banks. During the global financial crisis, as funding markets seized up, both euro area and U.K. banks withdrew sharply from Asia. From peak to trough, the foreign claims of euro area and U.K. banks fell by around 37 percent and 21 percent of outstanding claims, respectively (Figure 3.4).

The main question the empirical analysis aims to answer is: To what extent did deleveraging translate into a credit crunch in destination countries? A priori, a large deleveraging could affect credit supply in two ways—directly, and indirectly, through a reduction in foreign funding for local banks. On the other hand, if local and regional banks stepped up lending in response to foreign banks deleveraging, and if the policy response was sufficiently vigorous, this could mitigate any domestic credit supply response.

This analysis focuses on estimating the response of domestic credit supply to deleveraging by European banks. Data on domestic credit supply—the response variable—are gathered for a sample of 75 emerging economies and non-European advanced economies.⁴ The main explanatory variable is the change in foreign claims by European banks to the recipient country. The reason for focusing on European banks is twofold. First, a potential sharp deleveraging shock is most likely to come from European banks, given the continuing

² HSBC and Standard Chartered are classified as U.K. banks under the consolidated group definition employed by the BIS, since they are headquartered in that country.

³ The withdrawal of euro area banks from the syndicated loan market in Asia has been ongoing since 2007.

⁴ The sample is constructed from a union of sets of emerging markets compiled by (1) the FTSE Group; (2) MSCI; (3) Standard & Poor's; (4) Dow Jones; (5) Frontier Strategy Group; (6) Banco Bilbao Vizcaya Argentina (BBVA) Research; and (7) The Emerging Markets Index. In addition, the following recipient advanced economies are included: Australia, Canada, Japan, and New Zealand.

turmoil in the euro area. Second, while the United States is another important source country for bank finance, the U.S. foreign claims time-series from the Bank of International Settlements (BIS) has a serious structural break.⁵

This chapter contributes to a small and relatively recent literature on the transmission to the real economy of the external funding shock to bank balance sheets during the global financial crisis.⁶ Following Aiyar (forthcoming) and Cetorelli and Goldberg (2011), the empirical framework relies on a difference-in-differences specification. For the purpose of this study, the shock period refers to 2008:Q1–2009:Q1, where 2008:Q1 is the peak of outstanding foreign claims in most economies, and 2009:Q1 the trough.

The empirical approach must confront a number of potential issues, including endogeneity and disentangling demand effects.⁷ The relationship between domestic credit and foreign banking flows can in principle run in both directions. Reduced foreign inflows can lead to a decline in domestic credit, but it is also possible that anemic activity and bank credit may attract fewer inflows. To circumvent this potential endogeneity, the analysis instruments the main explanatory variable—the change in foreign claims over the shock period—using two different instruments: (i) the preshock ratio of international claims to foreign claims,⁸ with a higher ratio implying greater ex-ante vulnerability to deleveraging, and (ii) the weighted sum of ex-ante foreign claims on a given recipient by source country, where the weights are the proportionate

⁵ In late 2008, the surviving stand-alone investment banks, including Goldman Sachs and Morgan Stanley, were transformed into bank holding companies and included for the first time in the BIS sample. As a result, the U.S. claims series shows a sharp increase in 2008, rendering the data unsuitable for inference purposes.

⁶ These recent papers add to a much longer empirical literature on the transmission of liquidity shocks to the real economy during various different historical episodes. See Aiyar (2011) for a summary.

⁷ For further elaboration of technical details, see Aiyar and Jain-Chandra (forthcoming).

⁸ International claims, as computed by the BIS, refer to the sum of cross-border claims and local claims in foreign currency. Foreign claims include international claims and local claims in local currency. The former is much flightier, therefore the greater the value of the ratio of international claims to foreign claims, the more susceptible a country is to deleveraging when pressures emerge.

Figure 3.2. BIS Reporting Banks' Consolidated Foreign Claims on Selected Asian Economies by Sector¹
(In percent of GDP; as of 2011:Q3)

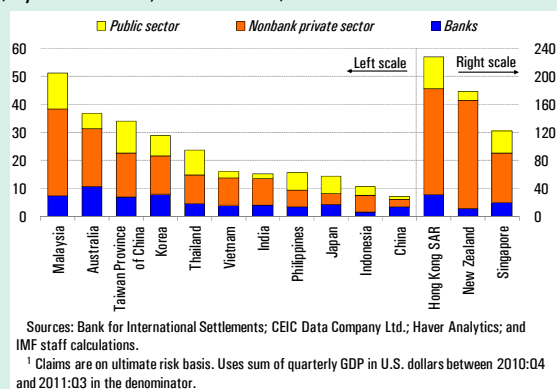


Figure 3.3. Asia: Export Credit Agency Backed Trade Finance (2011:Q3; year-to-date)

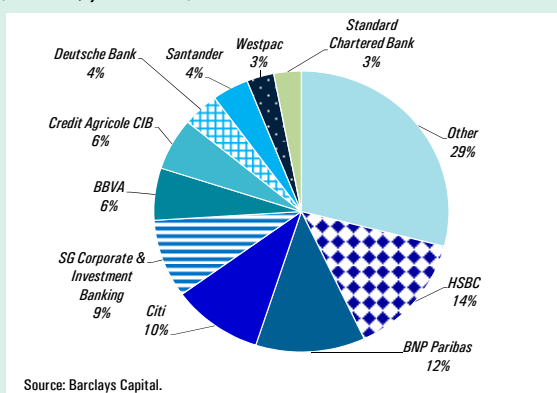
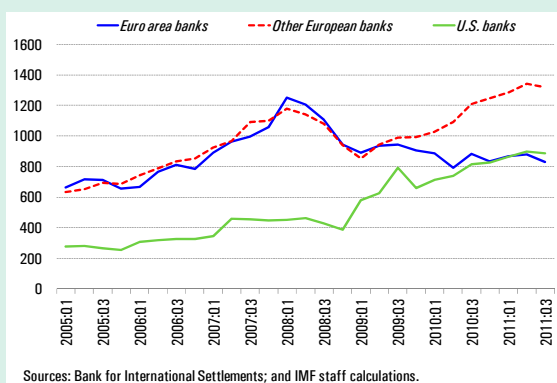


Figure 3.4. Consolidated Foreign Claims on Asian Economies (In billions of U.S. dollars; on immediate borrower basis)



deleveraging by a particular source country during the shock period to all recipient economies.⁹

These instruments are expected to be strongly correlated with actual deleveraging, but should not have a direct impact on the main variable of interest, that is, the change in domestic credit during the shock period. One concern about the validity of the second instrument is that during the 2008 crisis, all source countries were deleveraging at the same time in the context of the global liquidity shock. If the proportionate deleveraging by source countries were too similar, then the proposed instrument would be weak. But in fact an examination of the proportionate retrenchment by European source countries to all recipient countries shows considerable variation.¹⁰ This implies that from a recipient country's perspective, the identity of the precise source countries on which it is reliant for funding should be a good *ex ante* predictor of the shock that it faces.

The second concern relates to the fact that, in theory, an observed decline in domestic credit can be driven by reduced demand or supply. During the 2008 crisis, demand for credit also fell as activity slowed, so it is possible that the observed decline in credit was demand driven. To control for demand, we include the *ex ante* share of exports to GDP. Two related features of the crisis make this a good instrument: (i) the decline in demand in most recipient economies was driven, in the first instance, by a contraction in external demand; and (ii) the decline in external demand in most recipient countries was large relative to the decline in domestic demand.

The main finding is that deleveraging by European banks during 2008 led to a large contraction in credit

⁹ For example, suppose the recipient country has only two creditor countries, A and B. The instrument is country A's preshock claims on the recipient weighted by the percentage contraction in foreign credit from country A to all other countries during the shock period, plus country B's preshock claims on the recipient weighted by the percentage contraction in foreign credit from country B to all other countries during the shock period, all divided by the sum of country A and country B's preshock claims on the recipient.

¹⁰ This ranges from 71 percent in the case of Ireland, to minus 3 percent in the case of Finland. The standard deviation of the percent deleveraging by source countries is 20.5, relative to a mean of 16.2.

supply in destination countries. Table 3.1 shows the results from two-stage least squares regressions. A reduction in foreign liabilities of 1 percent resulted in a 0.6–0.7 percent decline in domestic credit. In the specification in column (2), we control for demand effects, and domestic credit remains equally sensitive to the changes in foreign liabilities. Postestimation statistics provide validation of the identification strategy.¹¹

Asian countries' credit supply response to deleveraging by European banks was significantly less than that of other countries. Column (3) introduces an Asia dummy variable, both by itself and as an interaction term. The Asia intercept is not significant, but the interaction with the change in foreign liabilities does seem important. Hence in column (4)—the preferred specification—the Asia intercept is omitted. This column shows that credit supply in Asian countries indeed contracted in response to the foreign deleveraging, but only about half as much as in the broad sample of countries. There are at least two possible explanations for this more-muted transmission in Asia: a stronger policy response and healthier balance sheets in local banking systems.

The strong policy response mounted by Asian economies could be one reason for the smaller credit supply impact of foreign deleveraging. Data limitations (including fiscal policy variables would limit the sample to about 40 countries) and nonuniform definitions (of policy rates) make it difficult to econometrically test the role of policy responses in the regressions. But a nonparametric examination of the sample data certainly suggests that the monetary—and to a lesser extent the fiscal—policy response in Asia was more vigorous than in other regions over the period studied here (Figure 3.5).¹² In addition, Asian countries also took a

¹¹ The results are robust to controls for the importance of European bank credit in each economy, using variables such as the ratio of European bank claims to total domestic credit, or the ratio of European bank claims to GDP. Moreover, the results are consistent with the broader literature on the cross-border transmission of liquidity shocks, for example, Cetorelli and Goldberg (2011), Aiyar (2011), and Schnabl (forthcoming).

¹² This figure shows the change in policy rates over the shock period. However the change in the fiscal balance is shown for end-2008 as these data are available only on an annual basis. The

(continued)

number of measures to maintain market confidence and stabilize financial markets. These included instituting liquidity guarantees, negotiating Federal Reserve swap lines, strengthening regional reserve pooling, expanding deposit insurance, guaranteeing nondeposit liabilities, and supporting trade finance and SME programs (Table 3.2).

Another reason for the more subdued impact of foreign deleveraging could be that Asia's local banking systems had healthier balance sheets entering the crisis. Figure 3.6 shows leverage ratios—the ratio of debt to equity—for Asian financial firms relative to global peers.¹³

- Banking systems in the Advanced Americas and in Advanced Europe were much more leveraged than their counterparts in Advanced Asia (almost three times as much, in the case of Advanced Europe). This meant that banks in countries such as Australia and Japan did not suffer the same pressure to deleverage as other major global banks when global liquidity dried up. They could expand credit supply in regional economies in response to deleveraging by other foreign banks, just as they appear to have been doing more recently.
- Banking systems in Emerging Asia had even lower leverage than those in Advanced Asia. Moreover, the leverage ratio for Emerging Asia was less than half of the comparators in the emerging economies of Latin America.¹⁴

magnitudes are not very sizable for two reasons: first, the implementation of fiscal policy entails significant lags and it is likely that while most governments had decided to use fiscal policy levers, these were not deployed by end-2008, and second, the absence of quarterly data means that the timing does not fully align with the shock period.

¹³ The focus is on leverage ratios rather than capital adequacy ratios, since the latter are typically defined in terms of risk-weighted assets, and regulators differ widely in different regions of the world in their definitions of risk weights and permissible regulatory capital (Das and Sy, 2012). Hence comparisons of capital adequacy ratios across broad regions such as Asia, Europe, and the Americas are problematic.

¹⁴ While Emerging Europe had the lowest leverage ratios of all, this does not adequately capture the region's high reliance on direct cross-border credit from (highly leveraged) West European banks.

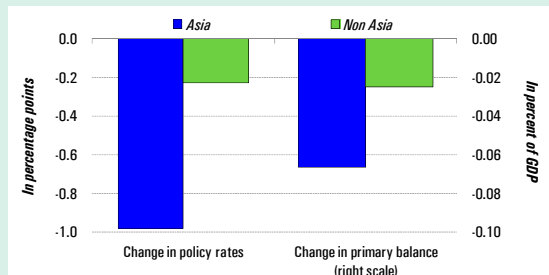
Table 3.1. The Impact of Changes in Foreign Claims on Changes in Domestic Credit Supply¹
(In percentage points)

Dependant variable: change in domestic bank lending	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS
Change in foreign claims	0.662 ** (0.274)	0.695 ** (0.284)	1.034 *** (0.473)	0.741 *** (0.234)
Exports-to-GDP (preshock)		-0.072 (0.055)	-0.098 (0.065)	-0.120 * (0.054)
Asia			-0.356 (0.242)	
Asia * change in foreign claims			-0.947 * (0.489)	-0.373 *** (0.120)
Constant	0.028 (0.135)	0.071 (0.148)	0.203 (0.242)	0.0547 (0.120)
Number of observations	75	75	75	75
Underidentification (H₀: Not identified)				
Kleibergen-Papp rank Wald statistic	9.45	9.367	5.670	9.886
p-value	0.008	0.009	0.058	0.007
Overtesting restrictions (H₀: Instruments uncorrelated with error process)				
Sargan-Hansen statistic	1.830	1.960	0.583	0.580
p-value	0.180	0.160	0.450	0.450

Source: IMF staff estimates.

¹ Robust standard errors given below coefficient estimates in parentheses. Statistical significance at 1, 5, and 10 percent levels is denoted by ***, **, and *, respectively.

Figure 3.5. Differences in Policy Responses: Asia versus Non-Asia¹



Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF, WEO database and staff calculations.

¹ The chart shows the change in policy rates during the shock period (2008:Q1–2009:Q1) and the change in the primary balance between end-2008 and end-2007 (as fiscal data are generally available only at an annual frequency).

Table 3.2. Summary of Policy Actions Taken in Asia during the Global Financial Crisis

	Australia	China	Hong Kong SAR	India	Indonesia	Japan	Korea	Malaysia	New Zealand	Philippines	Singapore	Thailand
Liquidity assistance in local currency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Lend foreign exchange	✓			✓	✓	✓	✓	✓	✓	✓	✓	
Expand deposit insurance	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Guarantee nondeposit liabilities	✓						✓		✓			
Prepare bank capital injection		✓	✓	✓	✓	✓	✓					✓
Create demand for assets	✓	✓		✓	✓	✓	✓	✓				
Impose short sale restrictions	✓	✓		✓	✓	✓	✓				✓	
Relax mark-to-market rules					✓	✓	✓	✓				
Institute SME programs		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Support trade finance	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
Secure Fed swap lines	✓					✓	✓		✓			✓

Sources: Bank for International Settlements; Economist Intelligence Unit (2010); and Asmundson and others (2011).

Figure 3.6. Debt-to-Equity Ratio in Financial Firms at End-2007
(Total asset-weighted average)

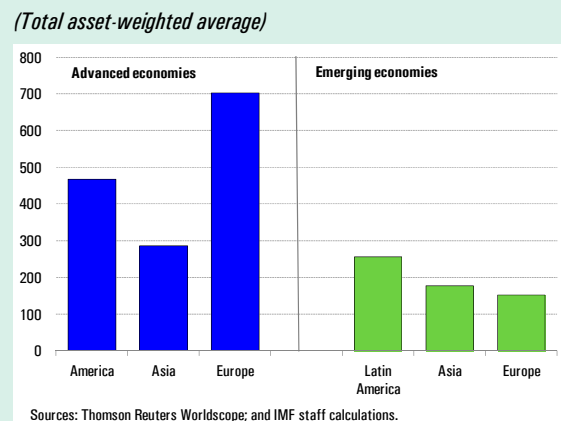


Figure 3.7. Selected Asia: Real Policy Rates¹
(In percent per year)

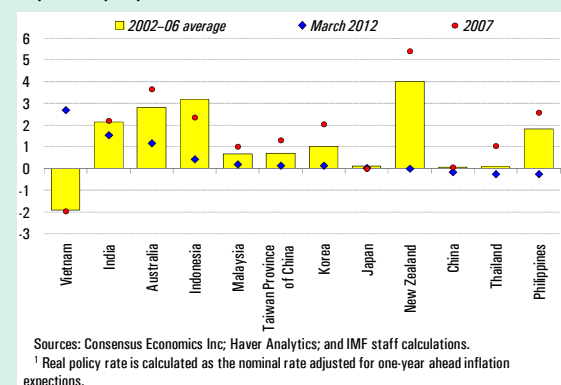


Table 3.3. Selected Asia: Impact on Tier 1 Capital Adequacy Ratios (CARs) following Deleveraging by European Banks¹
(In percent)

	Latest reported tier 1 CAR ²	Estimated tier1 CAR under deleveraging scenarios ³			
		Deleveraging by euro area banks only		Deleveraging by euro area and U.K. banks	
		25%	50%	25% each	50% each
Australia	9.8	9.4	8.9	9.1	8.5
China	10.3	10.2	10.2	10.1	9.9
India	8.8	8.5	8.2	8.1	7.4
Indonesia	12.3	11.7	11.1	11.1	10.2
Japan	13.5	13.1	12.7	12.9	12.3
Korea	11.6	11.1	10.7	10.4	9.4
Malaysia	12.7	12.4	12.1	11.6	10.6
Philippines	11.9	11.4	10.9	10.9	10.0
Singapore	13.6	12.9	12.3	12.1	10.9
Thailand	15.0	14.8	14.5	14.4	13.8

Sources: Bank for International Settlements; Bankscope; Bloomberg L.P.; and IMF staff calculations.

¹ Asset-weighted average of top three banks in each country.
² Latest available data are from September 2011 for most banks.
³ Deleveraging is in percent of consolidated foreign claims as of 2011:Q2. Assumes that in each country domestic banks expand balance sheets in proportion of their relative asset sizes in different deleveraging scenarios. A 100 percent risk weight for newly created assets is assumed for each bank with no new capital injections.

C. What Are the Implications of a Future Shock?

Looking ahead, Asia’s policymakers still have ample room to respond aggressively to a sharp deleveraging of foreign banks arising from a euro area shock. The space for a macro-policy response is smaller than it was before the global financial crisis. As mentioned in Chapter 1, compared to other regions of the world, Asia is still well placed to respond to shocks with countercyclical fiscal policy, but many economies have higher public debt levels than they did at the end of 2007. And as real policy rates are considerably below historical averages in all economies in the region in March 2012, the room to ease monetary policy is also less than before the global financial crisis (Figure 3.7). But policymakers in the region still have a large menu of measures at their disposal to stabilize financial markets and backstop liquidity in their banking systems. During the Lehman crisis, swap lines with the Federal Reserve played an important role in alleviating dollar shortages, both by expanding the supply of dollars and through their signaling effect. Such arrangements may need to be activated again should stresses escalate, along with regional pooling arrangements and, in several countries, drawing down on the large stock of international reserves. Time-bound deposit guarantees and programs to support trade finance and lending to SMEs could also play a role again.

At the same time, relatively healthy local banking systems should provide a buffer as they did after the global financial crisis. Asian bank balance sheets remain strong in general, owing to strong economic growth and conservative bank regulators. Capital adequacy ratios exceed regulatory norms in most economies, while nonperforming loan ratios are low in most of the region. Table 3.3 summarizes four European deleveraging scenarios of differing severity, calculates the nominal flow of credit that will need to be substituted by local banks in order for credit supply to remain unaffected, and traces out the implications for local banks’ capital adequacy ratios.¹⁵ In most Asian

¹⁵ The analysis here abstracts from several factors which could bolster or hinder Asian banks’ ability to take up the slack from European banks. For example, a large disruption in the euro area is

(continued)

economies, the large local banks can step in and make up for the reduced claims by euro area and U.K. banks. That said, under the most severe scenario, tier 1 capital ratios would sink to low levels in some countries.¹⁶ Moreover, the asset-weighted averages presented in this table mask vulnerabilities in specific banks in some countries.

likely to affect Asia's growth through trade linkages. If unemployment rises and asset prices fall, then the asset quality of domestic Asian banks would decline. Some of their existing capital buffers would be needed to absorb credit losses and would therefore be unavailable to support balance sheet expansion. On the other hand, the exercise conservatively assumes a 100 percent risk weight on all loans migrating from foreign to domestic banks. To the extent that actual substituted lending carries a lower risk weight, Asian banks would have more room to expand assets.

¹⁶ As shown in the previous section, leverage ratios in Asian banking systems are generally low, so that the binding constraint for credit supply is likely to be the regulatory capital ratio rather than a leverage target.