Global Economic Crisis: Impact and Challenges for Emerging East Asia's Financial Systems

A. Introduction

The resilience of emerging East Asia's financial systems is being tested as the global economic crisis continues to escalate and risks of global recession increase.

The credit turmoil that originated from the troubled United States (US) subprime mortgage sector over a year ago has evolved into a full-blown financial and economic crisis. Spillover is increasingly felt in emerging East Asia and poses sizeable risks to macroeconomic and financial stability.

Still, there remain be grounds for guarded optimism over the ability of Asian financial systems to weather the crisis.

The relative resilience of regional banking and financial systems reflects a number of factors, including: (i) the very limited direct exposure of the region to subprime and other related securitized products; (ii) relatively strong bank balance sheets with a return to profitability—as impaired loans from the 1997/98 Asian financial crisis have been worked off; (iii) improvements in risk and liquidity management; (iv) strengthening of supervisory and regulatory systems; and (v) moves by banks into new and profitable domestic business lines such as consumer lending. The move into consumer lending implies an absence of the strong search for yield that led many banks and other financial institutions in industrialized countries to take on too much leverage and risk.

In view of the increasingly close integration between regional and international markets, however, and the sharp slowdown in growth expected next year, it would be imprudent to ignore the possibility of larger spillover and tension in the region.

There remains the risk that the region's financial systems will come under extreme stress and that banks may pull back

further from credit intermediation, leading to a more regional or local "credit crunch". There are a number of important measures national authorities can take at this juncture to help forestall this and the associated threats to domestic financial stability. Under these circumstances, it is important for regional policy makers to ramp up monitoring of local financial markets and to establish contingency plans to deal with foreign and domestic currency liquidity problems, possible sharp deteriorations in bank balance sheets, and the risks of a generalized credit squeeze. As the crisis takes on broader and more troubling dimensions, Asian policy makers are facing a number of significant and growing challenges.

This section argues that the region's policy makers still have the opportunity to be proactive rather than reactive, and to forestall emerging threats to financial stability.

Key short-term challenges include helping regional financial systems weather the crisis and continue to function smoothly despite the shrinking global risk appetite and credit availability and slowing economic activity. Over the medium- to long-term, the region needs to continue strengthening risk and liquidity management, undertake any necessary restructuring and recapitalization, and upgrade market and institutional frameworks for providing systemic support for the smooth functioning of financial markets.

This section attempts to answer the following:

(a) How did the global financial crisis evolve?
(b) What has been the impact on the region's financial systems?
(c) Can the region's banking and financial systems weather the crisis?
(d) What should the region's policy makers do to safeguard financial stability?
(e) What are the medium- to long-term challenges facing the region's financial regulators?

B. How Did the Global Financial Crisis Evolve?

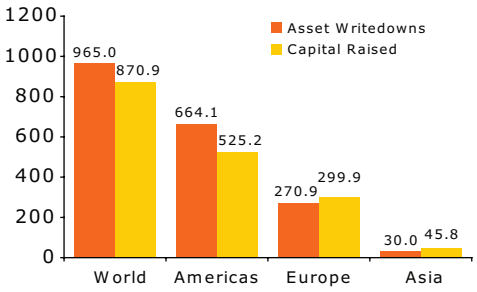
The global financial crisis deepened dramatically in September 2008 as several financial institutions imploded—leading to a crisis of confidence in the financial system itself.

The current global financial disruption emanated from the US subprime mortgage crisis. As the US real estate bubble burst, rapid devaluation of mortgage-related assets led to massive write-downs on financial institution balance sheets eroding their capital base. Mounting losses on impaired or illiquid assets first claimed highly-leveraged hedge funds—the collapse of two Bear Stearns funds in June 2007 marked the overture of the subprime saga (Appendix: Chronology of Main Events). The crisis took a disastrous new turn in September 2008, when Lehman Brothers filed for bankruptcy, Merrill Lynch was bought by Bank of America, and American International Group (AIG) received a rescue package from the US Federal Reserve (US Fed), all within a few days of each other. A number of significant financial institutions failed and bailouts have thus far led to dramatic changes in the global financial landscape, evoking unprecedented policy interventions to arrest the growing panic.

Deterioration in the credit quality of subprime mortgages spread quickly to broad asset classes held by a wide spectrum of investor groups around the globe.

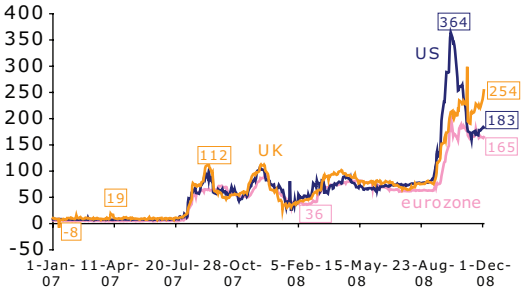
Major banking systems worldwide have thus far written down subprime-related losses reaching $965 billion since July 2007 **(Figure 51)**. As subprime-related losses mounted and troubled off-balance-sheet investment vehicles found their way on to balance sheets—or resorted to bank lending lines—banks scrambled for liquidity. Opacity created by the complexity of structured credit products exacerbated the effect of the liquidity crisis in the first phase. Structured credit products such as collateralized debt obligations (CDOs) derive from a pool of debts, which is then partitioned into "tranches" representing varying degrees of risk and then sold off to investors with different risk appetites. In this process, credit rating agencies had an important role in helping structure these products and issuing a rating based on credit enhancement. When rating

Figure 51: Writedowns and capital raised by major banks since the third quarter of 2007 ($ billions, as of 3 December 2008)



Source: Bloomberg.

Figure 52: 3-month Libor minus Overnight Index Swap (OIS) Spreads (basis points)



Sources: Staff calculations based on Bloomberg data.

agencies downgraded mortgage-related securities on deepening subprime losses, however, doubts over the ratings and their model-based valuations exacerbated the situation. Uncertainty about the valuation of these mortgage-related products—as well as the exposure of financial institutions to them—generated widespread distrust among financial institutions worldwide. This further hurt money market conditions on concerns over credit and counterparty risks. Key short-term market rates, which shot up in August 2007, remain elevated despite the rounds of coordinated actions by major central banks to ease monetary policies and inject large amounts of liquidity into interbank money markets **(Figure 52)**.

Liquidity evaporated and global money and credit markets effectively seized.

As strained financial institutions tried to unload their assets in distressed markets, asset values—particularly mortgage-related assets—plummeted. A vicious cycle started with falling prices leading to associated incremental losses, corresponding margin calls and other requirements for additional capital, and forced fire-sales, which drove asset prices down further. The cycle nearly toppled the overall financial system. Credit markets froze, effectively putting an end to price discovery. Amid heightened uncertainty over asset values backed by subprime mortgages and their derivatives, liquidity evaporated. Particularly following the bankruptcy of Lehman Brothers and the associated closure of the Prime Money Market Fund, widespread default risks led to a drying up of liquidity across interbank markets. As banks stopped lending to each other and hoarded cash, financial institutions have been forced to raise funds almost exclusively on overnight markets.

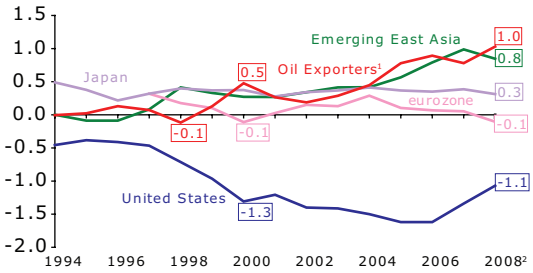
As markets froze, large liquidity injections and a raft of emergency measures were taken by the world's major central banks—followed by more broad-based rescue packages by governments.

The world's major central banks infused liquidity into financial markets through a range of facilities and by increasing swap lines or reciprocal currency arrangements. Many have slashed policy rates to help unfreeze credit markets. Governments augmented these actions by agreeing to purchase troubled assets, directly inject capital into troubled banks, purchase commercial paper, or

temporarily take equity positions in faltering financial institutions. G7 and G20 governments have called for coordinated actions to stem the financial crisis, which has ignited fears of a deep and prolonged global recession.

The ongoing crisis also reflects the disorderly unwinding of a number of macroeconomic and financial imbalances that emerged during the seemingly benign period of rapid global growth in the first part of this decade.

Figure 53: Current Account Balances (% of world GDP)



¹The oil exporters are Algeria, Angola, Azerbaijan, Bahrain, Republic of Congo, Ecuador, Equatorial Guinea, Gabon, I.R. of Iran, Kazakhstan, Kuwait, Libya, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Syrian Arab Republic, Turkmenistan, United Arab Emirates, Rep. Bolivariana de Venezuela, and Republic of Yemen.
² Figures for 2008 are estimates.

Source: *World Economic Outlook,* International Monetary Fund.

The key macroeconomic imbalances included the buildup of large current account deficits of the US and the corresponding surpluses in the rest of the world, notably Asia and the Middle East **(Figure 53)**. The financial excesses of the period involved the development of massive increases in leverage and risk-taking; bubbles in property and equity markets; a deterioration of credit and underwriting standards; and a sharp compression of risk spreads across a wide range of financial instruments. With the crisis unfolding, the imbalances are starting to unwind as the private saving rate in the US rises sharply, risks are re-priced, and leverage is cut back. The US government's response to the financial crisis also has implications for these already significant global imbalances, which could transform this unwinding process into something abrupt and very disorderly.

The adjustments to the US financial system are being accompanied by significant financial spillover across countries due to high levels of financial interdependence—including as result of the transfer of risk through complex securitized products—and sharp increases in risk aversion.

Channels of pass-through to the region's economies and their financial systems include (i) a sharp drop in US and world demand, (ii) a broadening credit crunch through a rise in risk premiums and a reduction in available funding, and (iii) changes in the future path of monetary policy rates and adjustments in long-term interest rates in major industrial economies. Most recently, traditional trade links are having an effect as exports slow sharply in response to a generalized weakening of economic growth. Commodity prices have retreated sharply from their peak levels earlier this year.

C. What Has Been the Impact on the Region's Financial Systems?

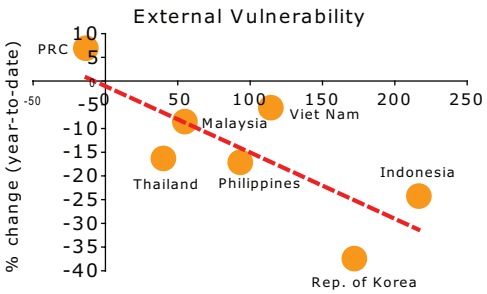
The intensified global credit crunch is adding pressure to emerging East Asia's economic and financial systems.

Early this year, the consensus was that the region's relatively strong fundamentals and large holdings of international reserves would provide a substantial measure of insulation from the global turmoil. However, with conditions in the advanced countries deteriorating sharply, spillover to the region is starting to increase dramatically in scale and scope **(Box 3)**. Contagion may strike the region's financial systems and economies more seriously if tightening credit conditions and financial instability affect broader economic activity regionally as well as globally. With share prices falling and credit conditions tightening, firms will face tougher financing conditions for new investment. Consumer and business confidence are already slipping.

The countries most affected include those with high foreign participation in local equity markets, banking systems that depend heavily on short-term foreign currency funding, and those running external current account deficits.

Volatility in the movement of foreign portfolio investments—short-term funds placed in stocks, bonds, and banks' overseas borrowing—is a significant risk. Exposures to short-term external funds have already affected the performance of the region's currencies amid greater uncertainty about the continuity and stability of these foreign currency funds **(Figure 54)**. Risks abound that international financial conditions could worsen further and dampen the investment climate further. Tighter credit conditions and increased financial market volatility could dampen investment spending, particularly where the business environment remains less friendly. And if the global credit crunch is prolonged, local funding conditions could also be affected, cutting into the region's economic activities more seriously.

Figure 54: External Vulnerability and Currency Movement[1]



[1]External vulnerability ratio is derived by dividing the sum of current account deficit, short-term debt, and foreign holdings of stocks and local currency bonds by total reserves. Currency movement is the percentage changes of the US$ value of local currency. Negative values indicate depreciation of local currency, and positive values indicate appreciation.

Sources: OREI staff calculations based on data from Bloomberg; Citibank; *International Financial Statistics,* International Monetary Fund; *World Economic Outlook,* International Monetary Fund (Oct 2008); and Joint External Debt Hub.

Box 3: Global Financial Integration and Volatility Spillover

Emerging East Asia's financial markets remain open to contagion from the global financial crisis. The 1997/98 Asian financial crisis showed clearly how rapidly crisis can spread. In response, authorities across the region implemented substantial reforms to improve their domestic financial systems. And one critical focus of these reforms was to deepen financial cooperation and integration at the regional level—in part as a safeguard against the spillover of global market instability. The region's policy makers also promoted capital account liberalization and regional financial integration along the way. Despite these efforts, however, regional financial integration remains in its infancy. Several studies find that financial markets in Asia are more financially integrated with the global economy than with each other.[1]

Increasing financial integration at the global rather than regional level, along with the rapid expansion of global capital markets, suggests that the potential for the financial transmission of global shocks has likely increased. This means, for example, that if the region's equity markets are fully integrated with global markets and no country-specific disturbances occur, stock prices should only react to news common to all markets. A simple test can be done to assess the extent of financial integration of the region's equity markets with the global markets.[2]

The returns of individual equity market are modeled as having an expected component and an unexpected one, $\varepsilon_{c,t}$. The expected return is obtained by relating individual market returns to a constant term and to the returns in the previous period. The error terms from the regression constitute the unexpected component of the return, or innovation.[3] The unexpected component is then decomposed into a purely local shock ($e_{c,t}$) and a reaction to global (say United States [US]) news ($\varepsilon_{us,t}$):

$$\varepsilon_{c,t} = e_{c,t} + \beta^{US}_{c,t}\varepsilon_{US,t} \qquad (1)$$

where β represents the country-specific sensitivity to US market shocks (of the unexpected component of equity returns).

It is assumed that an unexpected component of individual stock market returns can be decomposed into a purely local shock (an intercept or α_i) and a reaction to global news (proxied by an unexpected component of US market returns). If the local stock market is integrated globally, a global shock will dominate in explaining the unexpected component of an individual market return. That is, country-specific sensitivity (β_i) in the reaction to a US market shock will increase. On the other hand, the relative importance of local market shocks (α_i) will decrease. Under the assumption of complete global integration, α is close to zero and β close to 1.

In order to investigate the development of the country-specific betas over time, time-varying betas of individual markets have been calculated for the period from January 2001 through November 2008. [4] The time-varying betas are derived by running the above regression in 18-month rolling windows—the first $\beta^{US}_{c,t}$ is estimated using the monthly averages of equity returns for the first 18 months; subsequently, the data window is moved 1 month ahead and the equation is re-estimated until the last observation is reached.

The empirical results show that Asian equity markets track the US markets closely, and have increasingly done so. Tighter global integration translates into increased spillover from global shocks on returns and on the volatility of regional equities.

Figure B3.1 reports the unweighted average of $\beta^{US}_{c,t}$, for all *c*, as spillover intensity by which a US shock is transmitted to local equity markets, as well as the unweighted average of $e_{c,t}$, for all *c*, as an influence of purely local disturbance. The result generally confirms increasing spillover of global shocks on Asian stock market returns and the limited

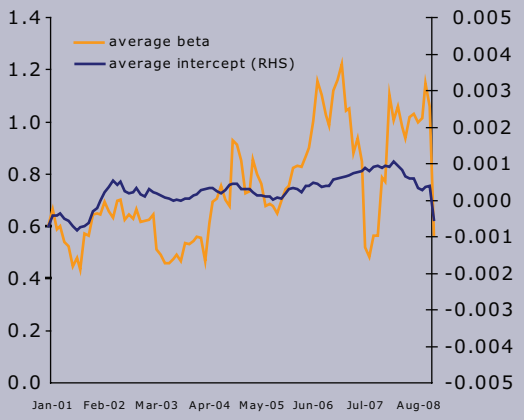
[1] Kim, Lee and Shin, 2007, "Regional and Global Financial Integration in East Asia" in *China, Asia and the New World Economy*, edited by Barry Eichengreen, Charles Wyplosz, and Yung Chul Park, and Kim and Lee, 2008, "Real and Financial Integration in East Asia" *ADB Working Paper Series on Regional Economic Integration* No. 17.

[2] For the details of the empirical methodology, see Lee and Park, 2008, "Global financial turmoil: Impact and challenges for Asia's financial systems," *Asian Development Bank Working Paper Series on Regional Economic Integration* No. 18.

[3] The conditional variance of the error terms is assumed to follow a standard asymmetric GARCH (1,1) process.

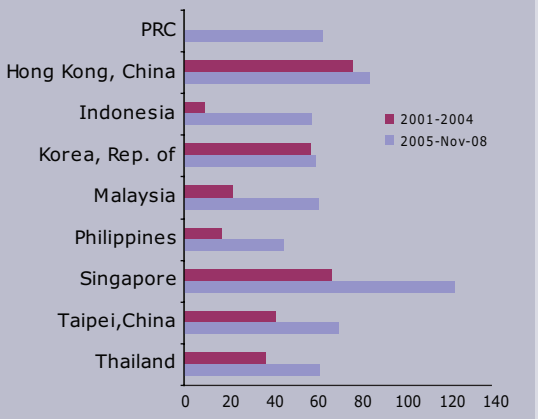
4 Equity returns are measured in local currency with daily frequency from 1 January 2001 to 3 December 2007 for 5 trading days a week. The continuously compounded total returns were calculated measured by the log differences of daily closing price levels such that, Rc,t = ln(Pc,t)-ln(Pc,t−1) for market c on day t.

Figure B3.1: US shock spillover intensity in Asian Equity Markets



Source: OREI staff calculations based on data from Bloomberg.

Figure B3.2: Share of Variance in local equity returns explained by US shocks



Source: OREI staff calculations based on data from Bloomberg.

influence of purely local news in explaining the change in level of returns. In particular, the average β increased sharply in recent months, reflecting the intensified spillover during the current crisis period.

Figure B3.2 reports the variance ratios for individual market returns. This is to estimate the proportion of total domestic equity volatility explained by the global (US) shock. The conditional variance is estimated by the GARCH (1,1) model for individual country-specific returns. Total volatility is then given by

$$\sigma^2_{c,t} = h_{c,t} + (\beta^{US}_{c,t})^2 \sigma^2_{US,t} \quad (2)$$

where $h_{c,t}$ is the variance of the local shock component.

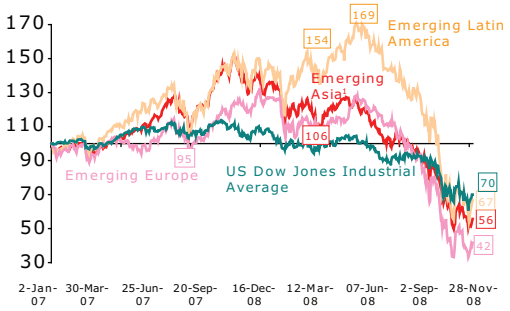
The variance ratio for an individual market is then obtained by

$$R^{US}_{c,t} = \frac{(\beta^{US}_{c,t})^2 \sigma^2_{US,t}}{\sigma^2_{c,t}} \quad (3)$$

The variance ratio will be close to one if the beta approaches one and when the volatilities of the local and US market returns are similar. The variance ratio is derived by assuming that local shocks are not correlated with US market returns.

The result shows the proportion of total domestic equity market volatility explained by US shocks for the two sub-periods 2001–2004 and 2005–2008 (through November). In most emerging East Asian markets, a US shock is a major force behind domestic equity volatility. Aside from Hong Kong, China; Korea; and Singapore, where equity markets were already rather sensitive to volatility spillover from the US, sensitivity has increased sharply in most other equity markets in the region during the latter period, reflecting the spillovers from recently sharp swings in US markets. The rising incidence of spillover from global shocks on Asian market returns and volatility are supportive of the view that the relatively more open markets in emerging East Asia show greater global integration.

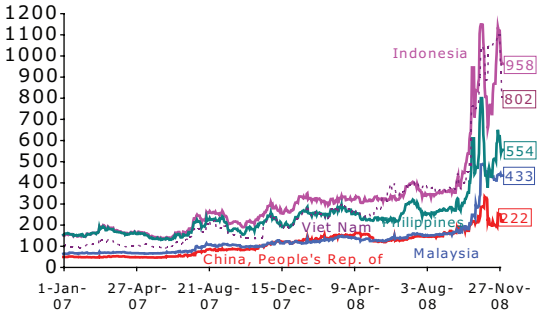
Figure 55: MSCI Indexes
(2 Jan 2007 = 100)



[1]Includes China, People's Rep. of; India; Indonesia; the Republic of Korea; Malaysia; Pakistan; Philippines; Taipei,China and Thailand.

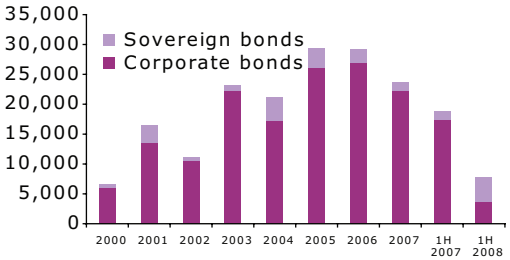
Sources: Morgan Stanley Capital International (MSCI) Barra and Bloomberg.

Figure 56: JP Morgan EMBI Sovereign Stripped Spreads (basis points)



Source: Bloomberg.

Figure 57: Corporate and Sovereign Eurobond Volume (Asia[1] excl Japan, $ million)



[1]Refers to China, People's Rep. of; Hong Kong, China; Indonesia; Rep of Korea; Macao, China; Malaysia; Philippines; Singapore; Taipei,China; Thailand; and Viet Nam.

Source: Dealogic.

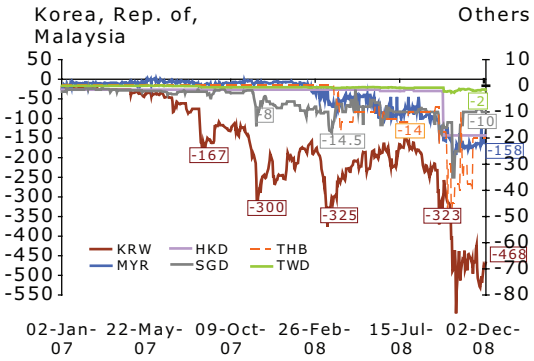
Across emerging East Asia, financial asset prices plummeted amid concerns over spreading global credit fears and the sharply deteriorating world growth outlook.

As global investors scale back holdings of emerging market assets amid continued financial system deleveraging, Asian equities and external funding conditions have been hurt. Asia's stock market indexes fell even more sharply than mature markets **(Figure 55)** and sovereign credit spreads widened significantly **(Figure 56)**. Heightened financial volatility and a sharp reversal in risk appetite—together with elevated funding costs—also narrowed external funding sources for Asian borrowers. Offshore bond issuance dropped sharply **(Figure 57)**. Capital outflows increased rapidly due to risk re-pricing and the unwinding of the "carry trade." The region's currencies also tumbled on flight to safety (see Figures 22a, 22b).

With the global credit squeeze, some emerging East Asian economies have experienced severe foreign currency liquidity shortages.

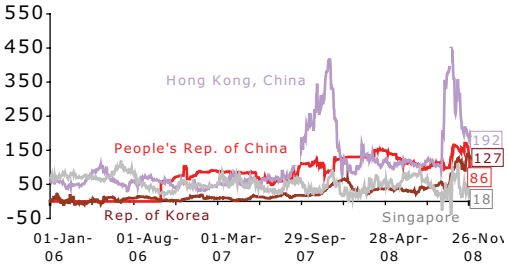
Despite the large build-up of foreign exchange reserves since the 1997/98 Asian financial crisis, dollar illiquidity is testing the resilience of Asian banks as access to international interbank markets has become difficult. As the global financial crisis intensified, major international banks sharply reduced interbank credit to Asian banks. Although this reduction reflects more the liquidity needs of major global banks than any change in Asian banks' creditworthiness, it has nonetheless led to tighter credit conditions and foreign currency liquidity shortages. Especially in the Republic of Korea (Korea) and Indonesia, withdrawals of foreign currency liquidity have been on a scale large enough that, from time to time, there have been significant challenges to financial stability. In view of the sharp rise in foreign currency liquidity and counterparty risks, cross-currency basis swap spreads (the cost that Asian banks have to shoulder in borrowing dollars by using local currency as collateral) have widened sharply **(Figure 58)**. This foreign currency liquidity issue has also had important ramifications for the region's investment and trade flows.

Figure 58: US Dollar Cross-currency Basis Swap Rate



Source: Bloomberg.

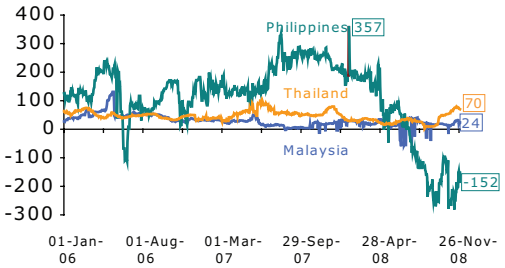
Figure 59a: IBOR minus Local Currency Governmont Bond Yields—NIEs[1] and People's Rep. of China (3-months, basis points)



[1]Excludes Taipei,China.

Source: Staff calculations based on Bloomberg data.

Figure 59b: IBOR minus Local Currency Governmont Bond Yields—ASEAN-4[1] (3-months, basis points)



[1]Excludes Indonesia.

Source: Staff calculations based on Bloomberg data.

Although varying in specifics, the region's authorities have responded to the sharp currency depreciation and tried to ensure adequate dollar funding for business.

Specific measures taken in the region to deal with foreign currency liquidity withdrawals include partial or blanket guarantees of customer deposits (Hong Kong, China; Singapore; Korea; Malaysia; and Taipei,China), guarantees for new external borrowing (Korea), and direct interventions in the spot and forward exchange markets to supply foreign currency. In parallel, both Korea and Singapore have recently concluded currency swap agreements with the US Fed. Although the historic swap arrangements of up to $30 billion each with the US Fed has provided some relief in foreign currency liquidity, uncertainty and volatility in bank funding markets remain high.

As interbank liquidity markets in the US and Europe seized, several bank funding markets in the region experienced a knock-on effect.

A sharp rise in counterparty risks and liquidity strains in major international interbank markets spilled over onto several regional interbank markets—particularly in key Asian financial centers of Hong Kong, China; and Singapore **(Figures 59a, 59b)**. There, the local currency interbank markets saw visible rate jumps and monetary authorities pumped in liquidity to bring greater normality to market operations. A smaller rate hike was also noticed in Korea. The domestic liquidity pressures reflect several factors, including arbitrage across foreign and domestic currency markets, rising uncertainty about the economic outlook, and stepped up risk aversion.

Authorities fear that a frozen interbank market—aside from squeezing the region's access to funding—will render a key channel of monetary policy impotent as well.

In Hong Kong, China, where banks have become more conservative in lending amid the global credit crisis, interest rates remained relatively high at the retail level despite the reduction of benchmark interest rates tied to US policy rates. In the current environment, regional banking systems have become much more concerned with balance sheet preservation

than taking on new credit risk. To this end, injections of domestic liquidity and guarantees of domestic bank deposits may not help foster new lending. Nevertheless the interconnectedness of global financial markets means the degree of success of measures implemented by US and European policy makers to restore confidence and unfreeze credit markets is as crucial, perhaps more so, than domestic efforts. Recently, there has been a substantial improvement in bank-to-bank lending as a result of US and European governments guarantees of interbank loans.

Although the impact of the ongoing crisis have thus far been manageable, there is concern that it is worsening, as the sell-off in regional equity and debt markets has intensified, and foreign currency liquidity shortages continue to pressure the region's financial systems.

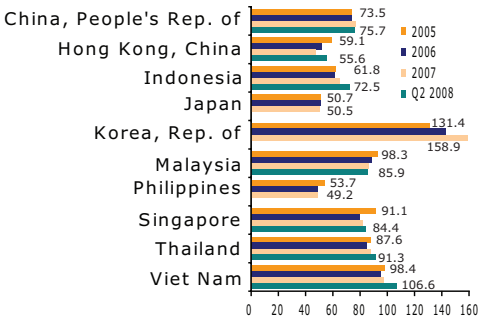
Although foreign currency liquidity pressures have abated somewhat as a consequence of active policy efforts, strains on the region's banking systems have not been fully addressed and may deepen in the face of a significant growth slowdown. The weakening regional growth will have implications not only for the quality of the region's bank balance sheets—through increases in nonperforming business and household loans—but may also lead to further downward corrections in the region's equity and property prices. Moreover, emerging East Asia's financial systems remain heavily bank-dominated and banking weaknesses will have significant systemic implications.

D. Can the Region's Banking and Financial Systems Weather the Crisis?

The region's banking systems entered this period of financial turbulence in relatively good health.

Limited exposure to the US mortgage-related assets has shielded Asia's banking systems from massive losses. Of the $965 billion in total write-downs and credit losses reported thus far, only $30 billion—or about 3%—comes from Asian financial institutions, the bulk of which concentrated in Japan and to a lesser extent, the PRC. Significantly—because of the small losses and banks' ability to raise fresh capital—credit losses have not materially impaired any of the region's banking systems' capital

Figure 60: Private Sector Loans to Deposit Ratio (%)



Source: OREI staff calculations based on data from *International Financial Statistics,* International Monetary Fund.

and profitability. Banks across the region also hold generally comfortable domestic currency liquidity cushions. Loan to deposit ratios across the region, with the exception of Korea, have been rather conservative **(Figure 60)** and many banking systems report high ratios of short-term assets to liabilities. These cushions reflect the increased attention to liquidity management since the 1997/98 crisis along with relatively subdued levels of lending to the corporate sector in recent years. Some pressures on domestic currency liquidity have, nevertheless, begun to emerge in a number of countries. Various indicators suggest the overall soundness of the region's banking systems, in terms of profitability, operational efficiency, and financial soundness, remains intact.

a. Prudential Indicators

On the whole, prudential indicators of emerging East Asia's banking systems remain solid with strong capital cushions.

Following post-Asian crisis efforts to deal with nonperforming loans (NPLs), bank recapitalization, as well as a period of robust economic growth and favorable financial conditions, the region's banks have strong profits and have further fortified their capital base. Although the current financial crisis has been going on for over a year, prudential indicators continue to show considerable strength of the region's banking systems. Most encouraging is the ratio of NPLs to total loans, which has continued to decline through the first half of 2008 (**Table 7**). Capital cushions have been sustained at high levels (**Table 8**). Through the second quarter of this year, most banking systems in the region continued to report relatively high rates of return on assets and equity, and did not experience increases in impaired assets (**Tables 9a, 9b**). This performance reflects the insignificant exposure of the region's banks to the toxic structured mortgage products that were extensively sold globally. Given largely domestically-focused business and relatively strong economic activities, profitability of emerging East Asia's banking systems has generally remained high in 2008 thus far.

Table 7: Nonperforming Loans (% of commercial bank loans)

	2000-2004 Average	2004	2005	2006	2007[1]	2008[2]
China, People's Rep. of	21.0	13.2	8.6	7.1	6.2	…
Hong Kong, China[3]	4.8	2.3	1.4	1.1	0.9	0.8
Indonesia	10.6	5.7	8.3	7.0	4.6	3.9
Korea, Rep. of	3.5	1.7	1.1	0.8	0.6	0.7
Malaysia[3]	8.9	6.8	5.6	4.8	3.2	2.4
Philippines[3]	14.8	12.7	8.2	5.7	4.4	4.0
Singapore	5.3	5.0	3.8	2.8	1.8	…
Taipei,China	5.2	2.8	2.2	2.1	1.8	1.6
Thailand	13.5	10.9	8.3	4.1	3.9	3.3

… = not available
[1]Data for Singapore as of Sep 2007.
[2]Data for Taipei,China, and Thailand as of Jun 2008; and Hong Kong, China as of Mar 2008.
[3]Reported nonperforming loans are gross classified loans of retail banks.

Sources: National sources; CEIC; and *Global Financial Stability Report,* International Monetary Fund.

Table 8: Risk-Weighted Capital Adequacy Ratios
(% of risk-weighted assets)

	2000-2004 Average	2004	2005	2006	2007[1]	2008[2]
Hong Kong, China	16.1	15.4	14.8	14.9	13.4	14.3
Indonesia	12.0	19.4	19.5	20.5	19.3	17.1
Korea, Rep. of	11.2	12.1	13.0	12.7	12.3	11.4
Malaysia	13.4	14.3	13.6	13.1	12.8	12.5
Philippines	17.0	18.7	17.7	18.5	15.9	15.7
Singapore	17.7	16.2	15.8	15.4	14.0	…
Taipei,China	10.5	10.7	10.3	10.1	10.6	10.6
Thailand	13.2	13.0	14.2	14.5	15.4	15.7

… = not available.
Note: Based on officially reported risk-adjusted capital adequacy ratios under Basel I and applied to commercial banks (except Republic of Korea, where data includes nationwide commercial banks, regional banks, and specialized banks). Data for the Philippines is on a consolidated, not solo, basis. Data for Japan is for major commercial banks only.
[1]Data for Singapore as of Sep 2007.
[2]Data for Malaysia, and Thailand as of Sep 2008; Indonesia as of Aug 2008; Korea and Taipei,China as of Jun 2008; and Hong Kong, China and the Philippines as of Mar 2008.

Sources: CEIC; national sources; and *Global Financial Stability Report*, International Monetary Fund.

Table 9a: Rate of Return on Commercial Bank Assets
(% per annum)

	2000-2004 Average	2004	2005	2006	2007[1]	2008[2]
China, People's Rep. of	0.2	0.5	0.6	0.7	1.0	…
Hong Kong, China	1.2	1.7	1.7	1.7	1.9	…
Indonesia	1.7	3.5	2.6	2.6	2.8	2.7
Korea, Rep. of	0.4	0.9	1.3	1.1	1.1	…
Malaysia	1.3	1.4	1.3	1.3	1.5	…
Philippines	0.8	1.0	1.1	1.3	1.4	1.2
Singapore	1.0	1.2	1.2	1.4	1.4	…
Taipei,China	0.3	0.6	0.3	-0.4	0.1	0.3
Thailand	0.1	1.3	1.4	0.8	0.1	1.2

… = not available.
[1]Data for Singapore as of Sep 2007; for PRC and Hong Kong, China as of Jun 2007.
[2]Data for Indonesia as of Aug 2008; for Philippines, Taipei,China, and Thailand as of Jun 2008.

Sources: CEIC; national sources; and *Global Financial Stability Report,* International Monetary Fund.

Table 9b: Rate of Return on Commercial Bank Equity
(% per annum, end of period)

	2000-2004 Average	2004	2005	2006	2007[1]	2008[2]
China, People's Rep. of		13.7	15.1	14.8	19.9	…
Indonesia	18.5	22.9	16.5	16.4	17.7	19.2
Hong Kong, China	15.3	18.7	18.4	18.9	…	…
Korea, Rep. of	6.3	15.2	18.4	14.6	14.6	…
Malaysia	16.2	16.0	16.8	16.2	19.7	…
Philippines	5.8	7.6	9.5	11.5	11.8	10.6
Singapore	9.6	11.6	11.2	13.7	13.4	…
Taipei,China	4.1	8.8	4.4	-7.3	2.6	4.4
Thailand	3.4	15.7	14.2	8.5	2.4	14.4

…= not available.
[1]Data for Singapore as of Sep 2007.
[2]Data for Philippines, Taipei,China, and Thailand as of Jun 2008; for Indonesia as of Mar 2008.
Sources: CEIC; national sources; and *Global Financial Stability Report,* International Monetary Fund.

b. Activity Indicators

Most of the region's banking sectors have scaled back investments in securities, likely due to the heightened uncertainty in financial markets.

The post-Asian crisis economic landscape saw business investment in many countries decline markedly, while exports and domestic consumption became the main engine of growth. Accordingly, the composition of bank lending shifted toward the

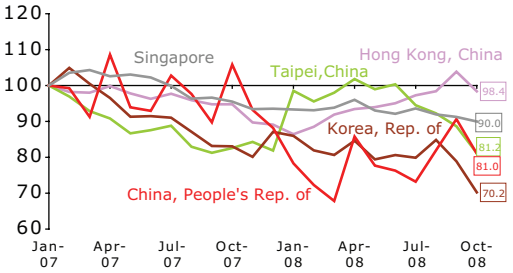
household sector, which increased bank sensitivity to changes in property and share prices and employment conditions. During the year, the region's banking systems reduced investments in securities, probably because of worsening financial markets (**Table 10**). In addition, bank lending to households has not kept up with nominal GDP in some countries, a possible sign of greater caution by the region's banks and the more uncertain business outlook **(Table 11a)**. It also appears that non-mortgage lending may have been reduced more than mortgage-lending in most countries **(Tables 11b, 11c)**.

c. Market Indicators

A marked decline in the stock market performance of banks and finance companies relative to the overall stock market index reflects fears that banks in emerging East Asia might incur substantial losses in the crisis aftermath as economic growth slows.

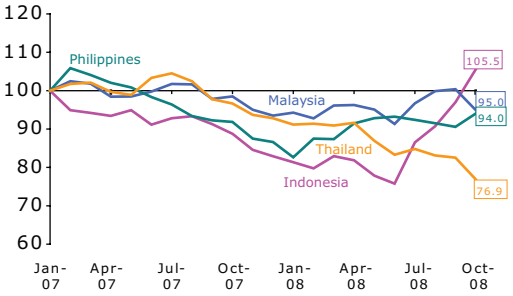
In general, most indexes of listed banks and finance companies on the region's stock markets performed below overall market indexes since August 2007 **(Figures 61a, 61b)**. The performance ratio has stabilized somewhat after it became apparent that banks in the region had very limited exposure to US mortgage-related investments. Nevertheless, despite the lack of any subsequent material deterioration in financial sector performance indicators, the bank equities in nearly all countries have continued to be priced at a discount to the overall market.

Figure 61a: Ratio of Financial Stock Price Index to Overall Stock Market Index—NIEs and PRC (January 2007=100)



Source: Bloomberg.

Figure 61b: Ratio of Financial Stock Price Index to Overall Stock Market Index (January 2007 = 100)



Source: Bloomberg.

Table 10: Securities Investment to Total Bank Assets of Commercial Banks (%)

	2000-2004 Average	2004	2005	2006	2007	Sep-2008[1]
Hong Kong, China	16.9	19.2	19.6	20.2	17.7	14.8
Indonesia	18.3[2]	20.2	18.0	24.8	27.8	17.4
Korea, Rep. of	23.2	20.8	22.1	20.2	18.6	17.4
Malaysia	12.7	10.6	9.6	9.3	11.9	13.1
Philippines	26.6	31.6	32.0	30.0	28.3	29.1
Singapore	16.9	17.1	16.5	15.9	15.8	14.3
Taipei,China	13.6	14.2	12.1	12.0	11.9	12.1
Thailand	15.2	16.0	16.0	15.8	15.9	14.7

... = not available.
[1]Data for Korea as of Jun 2008 and Philippines as of Feb 2008.
[2] Refers to 2001–2004 average.
Sources: CEIC, Hong Kong Monetary Authority, Bank Indonesia, and Bangko Sentral ng Pilipinas.

Table 11a: Household Indebtedness (% of GDP)

	2000–2004 Average	2004	2005	2006	2007	3Q2008
Indonesia	6.2[1]	8.2	9.1	8.5	8.9	11.4
Hong Kong, China	59.3	58.1	55.5	52.0	51.4	53.2
Korea, Rep. of	29.7	35.3	37.6	40.8	40.3	41.0[3]
Malaysia[2]	45.4	50.0	52.2	53.0	50.8	46.7
Philippines	5.5	5.2	4.7	4.2	4.3	4.1[3]
Singapore[4]	…	50.1	48.1	44.9	45.3	45.7
Taipei,China	45.9	53.0	57.9	55.8	53.5	53.8
Thailand	…	24.5	24.6	23.6	23.4	23.4

Table 11b: Household Non-mortgage Indebtedness (% of GDP)

	2000–2004 Average	2004	2005	2006	2007	3Q2008
Indonesia	4.7[1]	6.4	7.1	6.3	6.5	8.9
Hong Kong, China	10.4	10.9	11.6	11.7	12.9	13.5
Korea, Rep. of	12.6	13.6	14.1	15.2	15.7	16.0[3]
Malaysia[2]	20.0	21.9	23.6	24.7	23.6	21.7
Philippines	4.7	4.5	4.0	3.6	3.7	…
Singapore[4]	…	17.7	16.2	14.9	14.5	14.7
Taipei,China	17.8	21.5	23.3	19.2	16.6	15.7
Thailand	…	8.4	7.5	6.5	6.0	6.5

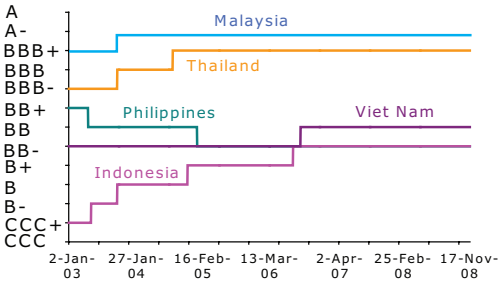
Table 11c: Household Mortgage Indebtedness (% of GDP)

	2000–2004 Average	2004	2005	2006	2007	3Q2008
PRC	…	10.6	10.0	10.6	11.6	…
Indonesia	1.4[1]	1.8	2.0	2.2	2.4	2.4
Hong Kong, China	48.9	47.3	43.9	40.3	38.5	39.8
Korea, Rep. of	17.1	21.8	23.5	25.6	24.6	24.3[3]
Malaysia[2]	25.4	28.0	28.6	28.3	27.2	25.0
Philippines	0.8	0.7	0.6	0.6	0.6	…
Singapore[4]	29.7	32.4	31.9	30.0	30.8	31.1
Taipei,China	28.1	31.5	34.6	36.6	36.9	38.0
Thailand	14.3	16.2	17.1	17.1	17.3	16.8

… = not available.
[1]Refers to 2001–2004 average.
[2]Sum of loans for personal use, credit cards, purchase of consumer durable goods, and purchase of passenger cars for commercial banks, merchant banks, and finance companies. 2006 and 2007 data from commercial banks and merchant banks only.
[3]Data is as of Jun 2008 (Korea) and Feb 2008 (Philippines).
[4]Refers to consumer loans from commercial banks and finance companies.

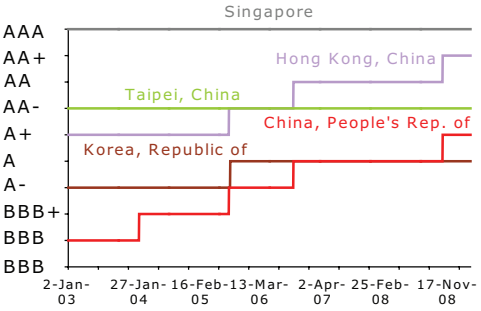
Sources: CEIC; *Monthly Statistical Bulletin,* Bank Negara Malaysia; *Monthly Statistical Bulletin,*Monetary Authority of Singapore; People's Bank of China, and Hong Kong Monetary Authority.

Figure 62a: S&P Sovereign Ratings—Selected ASEAN countries (Long-term foreign currency)



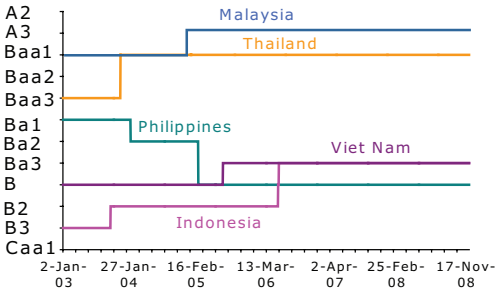
Source: Bloomberg.

Figure 62b: S&P Sovereign Ratings—NIEs and PRC (Long-term foreign currency)



Source: Bloomberg.

Figure 62c: Moody's Sovereign Ratings—Selected ASEAN countries (Long-term foreign currency)



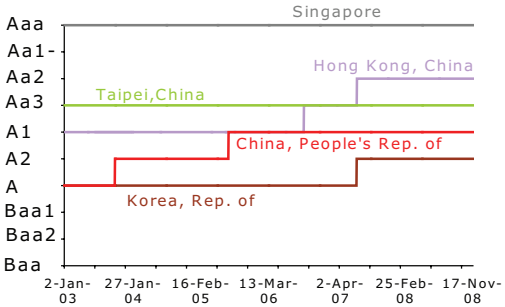
Source: Bloomberg.

This may be due the lack of any real progress in resolving the global financial crisis and a perceived risk of eventual contagion to the region's institutions.

Asian banking and financial systems will likely continue to weather the current financial turmoil relatively well, but they will inevitably face a tougher business environment in the coming year.

Notwithstanding the stable sovereign ratings of the region's economies—and the ratings upgrading in July of Hong Kong, China and the PRC **(Figures 62a, 62b, 62c, 62d)**, increased signs of stress in the financial sector have emerged in a number of Asian economies. In November, the sovereign outlook for Korea was downgraded to negative from stable by Fitch, as was Viet Nam in May. At the bank level, several small Vietnamese banks have experienced liquidity problems and sought central bank assistance. In other countries, downgrades in the rating outlook of financial institutions have occurred in the last two quarters, mostly from mid-September. Thus far, the rating outlook of seven financial institutions in Taipei,China has been revised downward by Fitch, as well as one each in Hong Kong, China; and Korea.

Figure 62d: Moody's Sovereign Ratings—NIEs and PRC (Long-term foreign currency)



Source: Bloomberg.

The growth slowdown will reflect the first real "stress" test of the robustness of regional financial systems in the aftermath of the 1997/98 financial crises, and of the preparedness of national authorities to act preemptively in response to emerging pressures.

Weakening growth regionally—and the continued tilting of global risks on the downside—implies a risk of a sharp deterioration in regional bank balance sheets and strains on financial systems. In the event the downturn in the region is very sharp, resulting increases in nonperforming assets and loans may be sufficiently large that they significantly cut into the capital cushions of banks. Another risk as economies slow is that banks may pull back from new lending, leading to a severe, generalized credit crunch. Some of the major advanced countries are already experiencing a sharp pull back in credit availability with potentially damaging consequences for the real economy. They are taking a range of measures to try to breathe life back into the credit intermediation process.

E. What Should the Region's Policy Makers Do to Safeguard Financial Stability?

Three sets of short-term policy responses are needed to bolster the foundations of financial stability and avoid deterioration in market confidence.

The most immediate challenges relate to pressures on foreign currency liquidity and the risks of spillovers to local financial systems. As is often the case, slowing growth may also reveal previously unrecognized financial system vulnerabilities. For this, contingency plans need to be in place to safeguard financial stability, while closely coordinating with policy measures on the macroeconomic front to forestall the risk of a sharp downturn in growth—further compromising regional financial soundness. Unlike the US or Europe, where financial spillover to the real economy has already occurred, preemptive and proactive policies may still help to sustain financial stability in emerging East Asia, thus breaking the potentially vicious loop between financial weakness and the real economy. While specifics will vary across economies, policy efforts fall broadly under the following three categories:

First, crisis management frameworks need to be strengthened and ready to be implemented, if required—critically important will be the scope and effectiveness of the institutional arrangements for providing emergency liquidity and other support while ensuring the adequacy of existing frameworks for dealing with troubled institutions.

- Regulators need step up their monitoring of bank solvency and to have clear policies in place to deal with stressed institutions. It will be also useful for national regulators to clearly signal that they are monitoring conditions closely and are ready to take measures to maintain financial stability. In normal circumstances, prompt corrective action frameworks would call for a graduated response to bank capital falling below certain critical thresholds and, in the extreme, to the possibility of bank closures. In current unsettled conditions, however, some deviations from this approach may be called for in the event of difficulties in systemically important institutions. If circumstances warrant, central banks should consider expanding the range of acceptable collateral while availing a broader set of liquidity instruments. For example, use of an auction-type facility for discount lending may counter the stigma associated with emergency funding requests.

- Extending and formalizing official guarantees of bank and other deposits might also be considered as short-term liquidity measures—should lender of last report facilities not be sufficient to prevent bank runs if confidence evaporates. Already, there have been a few bank runs, although they have been very localized and based on unfounded rumors. Nonetheless, the recent experience in industrialized countries suggests it may be prudent to address the risk of bank runs. To date, several countries in the region have announced the temporary introduction of blanket guarantees on deposits (Hong Kong, China; Singapore; and Malaysia) and/or have extended guarantees that had been scheduled to be removed (Indonesia and Thailand). As the1997/98 crisis showed—along with the recent experience in the industrialized countries—such guarantees can help limit pressures on banks and assist in maintaining financial stability. At the same time, however, these measures raised concerns about moral hazards in the banking sector and should be applied judiciously.

- Insolvencies require a case-by-case approach as national authorities need to balance immediate threats to financial stability against concerns over moral hazard and the potential budgetary implications of official interventions. Whatever approach is taken, it will be important that the reasons for particular interventions are explained to the market, along with why some institutions may be treated differently from others. Needless to say, regulators should not be fully transparent *ex ante* about the approaches they will take so as to limit moral hazard. In the current unsettled international conditions regulators may nevertheless usefully signal that systemically important financial institutions will not be allowed to fail. Public recapitalization schemes should also be at the ready where appropriate.

Second, the region's policy makers need to ensure adequate provision of foreign and domestic liquidity on a timely basis so that systemically important financial institutions do not come under pressure and flows of credit to key economic activities are not compromised.

- Regulators should encourage banks to increase transparency through more regular and timely reporting of key indicators of liquidity, profitability, and capital—and their exposure to advanced country counterparties. In parallel, regulatory standards for liquidity risk management need to be reviewed and strengthened, particularly for banks that rely heavily on wholesale funding. Authorities need to ensure that regulated financial institutions have in place proper liquidity risk management frameworks to avoid maturity mismatches, are subject to extreme stress testing, and have formulated contingency plans to deal with a disruption in external financing. Details of banks' financial positions should be regularly reported.

- Although easing somewhat recently, foreign currency liquidity pressures have not fully abated and may intensify in the face of further problems in advanced country financial institutions. National authorities may consider extending government guarantees to bank funding sources and ensure the adequacy of deposit insurance where appropriate. Direct interventions in foreign exchange markets or arranging

bilateral or multilateral swap lines with foreign central banks or multilateral financial institutions could also help. In any case, the coverage and duration of deposit insurance systems and official guarantees should be explicit and supported by stepped up prudential oversight in order to avoid excessive risk.

- With the risk of pressure on domestic liquidity increasing, national authorities need to be ready to provide liquidity support on a timely basis where needed. The region's central banks should have a number of tools—most importantly lender of last resort facility so liquidity can be provided directly to banks if necessary—ready to address any pressures that emerge in local currency funding markets. At the same time, they should make sure liquidity support operations will not unnecessarily compromise monetary policy objectives. In parallel, clear policies are needed on eligibility, collateral to be accepted, interest rates charged, and maturity of lending. In all cases where lender of last resort is provided, authorities should ensure that adequate collateral is provided so as to avoid putting the central bank balance sheet at risk.

- In the event that circumstances warrant liquidity provision to financial institutions that are not covered under standing facilities, specific terms and conditions for support need to be made public. As part of contingency planning, authorities may also explore the modalities for providing support and whether any liquidity might best be made available directly to institutions in need or indirectly through bank lending.

Third, as the spread of the global financial crisis increasingly affects the region's growth prospects, policy responses will need to focus on containing the spillover effects of worsening financial conditions and risks arising from weaker growth on the region's banking systems.

- Regulators should encourage banks to immediately start raising capital to strengthen capital ratios well above prudential norms. Such preemptive action can provide larger cushions for any significant increase in impaired assets. These also send clear signals to the market that banks are entering the downturn from a position of strength rather than weakness.

- Authorities should undertake necessary measures to avoid a downward spiral arising from a broadening credit crunch feeding into the real sector. Providing guarantees on new lending might be a first option, if bank balance sheets and liquidity positions remain sound and the pullback is the result of excessive risk aversion. Providing full or partial guarantees to new lending can encourage credit activities and, as a result, avoid even sharper slowdowns in economic activity.

- Alternatively, however, if the pullbacks in credit are the result of bank capital becoming inadequate due to write downs and losses, the preferred approach might be to attract more capital to the sector. Where banks may not be able to raise additional capital in local capital markets or cutback on dividend payments so as to preserve capital, official capital injections may be considered.[13] In the extreme case of a credit crunch, where capital injections to the banking systems do not lead to increased lending, credit can be supplied directly to the real economy either by the public sector buying financial instruments issued by firms or through central bank credit extensions. This was the case during Japan's financial crisis in the 1990s, while a similar approach was adopted again more recently in the US and Europe.

F. What are the Medium- to Long-term Challenges Facing the Region's Financial Regulators?

The turmoil in the international financial markets has revealed significant weaknesses in the functioning, regulation, and oversight of financial systems within and across international borders.

Authorities in the region, both individually and collectively, need to address weaknesses in the financial systems and improve their functioning and integrity. Measures in these areas can be usefully coordinated regionally and with initiatives from the G20,

[13] Many regional economies already have established some modalities for recapitalization to shore up bank balance sheets from the 1997/98-crisis experience. Key considerations include the terms and conditions for official capital injections. In choosing between capital injections through preferred and common stocks, it is necessary to balance a number of competing considerations, including the impact on the incentives for raising private capital, the upside and downside risks to be faced by taxpayers, and the degree of effective control authorities wish to assert over assisted institutions.

the Financial Stability Forum and the International Monetary Fund (IMF) calling for the detailed work programs focusing on crisis prevention and improving crisis management. Based on the experience of the Asian financial crisis as well as the spillovers from the current turmoil, the region has a strong interest in contributing to the work programs and ensuring that financial systems becomes less crisis prone. The key areas requiring attention fall under broad headings:

Strengthening Transparency and Accountability:

- Responding to the problems associated with the opaqueness of complex derivative products and a lack of clarity about who holds the risks, special attention needs to be paid to measures to strengthen financial system transparency. Accordingly, attention should be given to enhancing the disclosure of complex financial products and ensuring "complete and accurate disclosure" by firms of their financial conditions.
- Problems of misaligned incentives that contributed to excessive risk taking and leverage are also to be addressed. The Financial Stability Forum and the IMF have noted numerous problems during the current crisis related to a misalignment of incentives between owners and managers of financial institutions that led to a short-term focus and excessive compensation; misaligned incentives faced by credit rating agencies in supplying ratings and offering advisory services, that may have contributed to excessively high ratings of complex financial instruments; and misalignments of incentives in the context of the originate and transfer model of securitized finance, that may have led to issuers of mortgages not paying adequate attention to the risks of the products included in CDOs and related securities. In principle, the reforms that will eventually be adopted will seek to ensure more incentive-compatible contracts that address these and related problems.
- Especially in the region, close attention will be needed to ensure that local banks are properly classifying loans and adequately provisioning against problem loans, with a proper information system to monitor customer credit. The Philippines recently passed a law that would centralize, collate, and disseminate credit information of borrowers. Malaysia's experience with a centralized credit information system has not only improved credit assessment and hence asset quality

of banks, but also expedited loan processing, increased loan volumes, and reduced borrowing costs. Regulators also require information on household balance sheets and income data that could help provide useful and realistic assessments of potential economic and financial shocks to the banking sector.

Enhancing Sound Regulation and Prudential Oversight:

- Weaknesses and gaps in financial sector regulation and supervision arguably allowed excessive leverage and risk-taking, and the build up of significant off–balance sheet leverage in Special Investment Vehicles and other conduits. Accordingly, strengthening and broadening regulation and oversight can help address those features of regulatory regimes that may have contributed to the current turmoil.
- Regulators need to strike an appropriate balance between competing objectives such as fostering financial innovation and maintaining financial stability. In doing so, however, they need to resolve the issues regarding the particular means to close regulatory gaps and ensure that all financial institutions and markets are subject to "appropriate" supervision or oversight.
- Important underlying issues include the nature of the regulatory regime that will be applied to non-bank financial institutions such as hedge funds, investment banks, and insurance companies, which have posed systemic risk during the current crisis. Similarly, a set of questions will need to be addressed regarding the oversight of large and opaque over-the-counter markets (OTC) in products such as credit default swaps (CDS). An important issue is the extent to which trading, settlement, and clearance in certain OTC markets—such as the CDS market—should either be centralized or shifted to formalized exchanges in order to reduce systemic risk.
- Stress tests should be carried out for extreme scenarios to gauge a system's stability as a whole. Other prudential supervision issues that may need attention relate to the strength of credit risk systems for overseas assets, the need for consolidated supervision, adequacy in communication between central banks and supervisors, the regulation of systemically important nonbank institutions and the scope of resolution and bankruptcy laws in light of the shutdown of cross-border financial institutions.

- In light of rapidly changing global financial landscape, many countries may consider alternative approaches to financial sector regulation and the possible adoption of new regulatory structures. A rationalization of the current fragmented regulatory structures in number of economies is one possibility. Regulators may seek to strengthen frameworks for macro-prudential oversight. This would be to both complement existing micro regulatory structures and ensure an appropriate focus on macro-prudential issues and systemic risk. Across many countries, central banks having been playing a key role monitoring and assessing systemic risk—including in the context of regular reports on financial stability—it is expected that these efforts will intensify. In line with this, the region needs to strengthen national and regional economic and financial monitoring using specific macro-prudential and financial vulnerability indicators through the mechanisms in place under the ASEAN Surveillance Process and ASEAN+3 Finance Ministers' Process' Economic Policy and Review Dialogue.[14]

Mitigating Procyclicality of Financial Systems:

- Regulators should consider designing prudential regulation in a countercyclical fashion, including forward-looking risk evaluation and adequate liquidity provisioning, to help *ex-ante* in avoiding large financial swings and their destabilizing effects on the economy **(Box 4)**. Currently, most financial systems exhibit a high degree of procyclicality. For example, as a result of mark-to-market, variations in specific provisioning, and changes in perceived risk, the Basel II framework may lead to the amount of capital banks are required to hold declining during business cycle expansions and increasing during contractions. Particularly in emerging market economies, excessive risk-taking during booms—associated with large capital inflows and rapid domestic credit growth—is often the origin of a financial crisis. Maturity and currency mismatches on financial and nonfinancial balance sheets during booms also add severe strain on currencies and financial systems. Effective risk analysis by financial institutions, together with countercyclical and forward-looking prudential provisioning, will help sustain financial stability through the down cycle.

[14] ADB assists in national and regional surveillance through its "Vulnerability Indicators and Early Warning Systems" software—installed in the ministries of finance and central banks of 10 ASEAN+3 countries. Surveillance reports are helpful in detecting the main sources of macro-economic instability in order for authorities to take prompt policy actions to restore economic fundamentals.

Box 4: Macroprudential Surveillance of Financial Systems

An important consequence of the current global financial crisis is the need to strengthen macroprudential surveillance. Macroprudential surveillance focuses on the links between key components of a financial system (cross-sectional focus), how systemic risk varies over time (temporal focus), and the robustness of financial systems when confronted by shocks (systemic risk). In short, macroprudential surveillance examines generic, big-picture issues that can trigger a large-scale financial crisis. Conversely, micro-based supervision, although critically important, focuses largely on the safety and soundness of individual financial institutions, instruments, and markets and does not typically address broad systemic issues. Also, micro-based supervision deals largely with the regulatory compliance of institutions, whereas macroprudential surveillance focuses on monitoring the system's overall performance and emerging risks. As macroprudential surveillance is a relatively new discipline, its key tools and approaches are not yet well developed. Nonetheless, they have expanded rapidly in recent years.

The current attention on macroprudential issues is not new. Over the past 10 years or so, many central banks have ramped up their work on systemic financial issues. A relatively common approach has been for monetary authorities to establish departments—such as financial stability groups—to regularly monitor, assess, and report on systemic financial developments. Using information from many sources, and in close collaboration with micro-based supervisors and regulators, financial stability groups typically develop "models" of the interlinks and spillovers across different segments of a financial system, using tools such as Value at Risk (VaR)—a statistical analysis of historical price trends and volatilities—to identify key risks and vulnerabilities. They also subject financial systems to a variety of stress tests to check for robustness. Financial stability groups also make use of a wide range of financial market indicators and communicate regularly with private sector market participants to access and assess financial intelligence. Work programs also frequently include developing composite early warning indicators for systemic risk events.

The work of the financial stability groups is typically carried out in close coordination with—but separate from—groups that prepare macroeconomic forecasts using variables such as GDP, balance of payments, and inflation. As documented in a recent International Monetary Fund (IMF) Working Paper,[1] an increasing number of central banks have begun to regularly publish financial stability findings in standalone reports. Within emerging East Asia, People's Republic of China (PRC);, Hong Kong, China; Indonesia; Republic of Korea (Korea); Malaysia; Singapore; and Thailand regularly prepare financial stability reports. At the same time, the IMF, Financial Stability Forum (FSF) and the Bank for International Settlement (BIS) also regularly issue their own financial stability or related reports. And there are regular international and regional meetings of the FSF and IMF to review financial system developments and issues, and emerging threats to financial stability.

Three considerations, in particular, lie behind the current interest in strengthening macroprudential surveillance and giving it a more significant role:

- The failure to anticipate the current crisis and the implied threats to systemic financial stability within and across countries;
- The apparent high degree of procylicality of financial systems under which both boom and bust conditions tend to feed themselves in virtuous and vicious spirals; and
- Large interdependencies across markets, financial instruments, and institutions related to the "originate and transfer" model of finance, high levels of short-term capital market funding, and the difficulties pricing complex securities.

Currently, efforts to strengthen macroprudential surveillance focus on ways to mitigate the high procyclicality of financial systems. At the same time, however, work continues on improving the understanding of the highly complex interactions across institutions and markets, informed by the spillovers and links during the current crisis; and there is renewed interest in developing early warning indicators of impending financial distress.

Several ideas have been advanced to help mitigate the high procyclicality of financial systems. As discussed by the IMF, World Bank, and Bank of England, several key proposals have been proffered:[2]

- The re-introduction of a pure capital assets ratio under which banks are required to maintain a certain minimum level of capital in relation to their on and off

[1] Martin Cihak, How do Central Banks Write on Financial Stability?, IMF Working Paper 06/163.

[2] International Monetary Fund, *Global Financial Stability Report*, October 2008. Bank of England, *Financial Stability Report,* October 2008. World Bank, *The Unfolding Crisis. Implications for Financial Systems and their Oversight*. October 2008

balance sheet assets. Such a ratio would be in addition to the risk-adjusted Basel capital ratios and would provide a direct limit on the overall amount of leverage a bank can assume. The ratio is designed to limit the amount leverage increases during boom periods and hence reduce the need for a possibly destabilizing deleveraging process during downturns. More generally, a pure capital asset ratio would ensure that banking systems hold a specified minimum level of capital at all times, and does not engage in regulatory arbitrage across different risk-weighted assets, so as to reduce levels of capital below a certain minimum level. The proposal would represent a return to the pure capital ratios used by the United States (US) and United Kingdom (UK) before the first Basel Accord came into effect in 1988. In this sense, at least, the proposal could be seen as a step backward, in so far as it takes no account of the riskiness of different assets in determining capital requirements. How effective a pure capital asset ratio might be in mitigating procyclicality still needs to be studied carefully. Essentially, the ratio obtains its traction by seeking to offset the tendency for the perceived riskiness of assets to decline during booms, leading to increased leverage during these periods. The pure capital asset ratio places an upper bound on leverage. Rather obviously, the capital underlying the ratio needs to be the "real" thing—Tier I capital—and it is critical that off-balance sheet assets are fully covered for the proposal to be effective. At the same time, it is not clear how banks will respond to such a ratio and whether the implicit equal risk-weighting of assets will itself encourage more risk-taking rather than less; a concern that led to the creation of different risk buckets under Basel I and II. To the extent to which a pure capital asset ratio was to limit leverage during the business cycle expansion, it could contribute to mitigating some of the current procyclicality of financial systems.

- Systematically varying regulatory (risk-adjusted) capital ratios over the business cycle according to simple formulae so that the ratios increase during boom periods and are reduced in a downswing. To the extent to which such an approach reduces leverage in a boom, it could contribute to less procyclicality, as in the case of the (fixed) pure capital asset ratio. And there would be less need for deleveraging in a downturn, as the regulatory capital ratio would decrease. How such a time-varying rule would work in practice depends on a number of factors, including the formula used to determine the regulatory capital ratios, with a possible role for both current and lagged credit growth in influencing the ratio, and the sensitivity of the ratio to its determinants. To the extent to which the approach introduces a distinction between an average regulatory capital ratio and its variability over the cycle, there are also important issues with tying down the appropriate "average" regulatory capital ratio and the permissible amount of variation over the business cycle. Considerable further work is required on these and related issues.

- Varying specific or general provisioning over the business cycle to offset procyclicality. Given that specific provisioning tends to decline during business cycle upturns when loan losses are low (while rising during downturns), a simple approach would be to vary general provisioning so as to offset these moves and keep total provisioning (general plus specific provisioning) in relation to total loans constant over the cycle. This approach—referred to as "dynamic provisioning"—has desirable features and, to the extent to which general provisions are included by many countries in Tier I capital, would amount to varying regulatory capital over the cycle. How the proposal would work in practice would depend on the particular features of the provisioning rule adopted. At least, in principle, the approach would have the desirable feature of building up general loss reserves

during boom periods when bad loans are made, thereby creating a larger cushion for downturns, when bad loans appear. Another approach to dynamic provisioning would be to provide greater discretion for supervisors to vary provisioning and related requirements over the cycle. Within the region, Singapore; and Hong Kong, China in particular, have adopted what could be characterized as discretionary approaches in so far as they allow some counter cyclicality in items such as loan loss provisions and loan to value ratios, among others.

Each approach is intended to mitigate somewhat the current procylicality of financial systems. Considerable further work is needed, however, before they can become operational. There are several significant issues requiring further exploration:

- First, there is the question of policy assignment and, in particular, the appropriate balance between monetary and macroprudential policies in seeking to mitigate procylicality and financial imbalances. In practice, both monetary policy and strengthened macroprudential oversight could lean against the wind during boom periods, and national authorities will need to decide which is the main instrument used in this connection. In some countries, such as the US, there have been concerns that monetary policy may be too blunt an instrument to deal with financial imbalances and may become overburdened should it absorb financial stability objectives in addition to its inflation and growth objectives. Conversely, the European Central Bank (ECB) appears to favor a larger role for monetary policy to lean against the wind during financial booms.

- Second, the links between strengthening macroprudential surveillance, on the one hand, and the current differences between micro- and macro-based surveillance systems, on the other hand, require resolution. The issues arise because paying greater attention to macroprudential policies over the business cycle could, in principle, take place at either the micro- or macroprudential level. To the extent to which this is the case, current distinctions between the macro- and micro-prudential approaches could become blurred and some overlap of functions might occur. Attempts to strengthen macroprudential surveillance will need to address these and related issues.

Emerging East Asian economies have a strong interest in the current international work program to strengthen macroprudential surveillance. Moreover, insofar as conclusions are reached on the desirability of particular approaches to help mitigate the procyclicality of financial systems, these are likely to be reflected in the various standards and codes promulgated by international standard-setters. In addition, countries in the region could usefully share their own experiences with macroprudential surveillance and the approaches that are used to help mitigate procyclicality and improve the understanding of the complex interactions across institutions, markets and financial instruments.

Prudential regulation and supervision should also take into account risks associated with boom-bust cycles at the macro level. The role of credit rating agencies is also important in providing more *ex-ante* credit information.

- A potentially important proposal to mitigate such procyclicality is allowing regulatory capital ratios to vary to offset some of the procyclicality of financial systems. Various approaches can be taken to adopt a more counter-cyclical approach. One approach, discussed by the Bank of England, is to adopt a formal system of dynamic provisioning, under which general provisioning would rise during boom periods in such a way as to ensure that overall provisioning (specific and general provisioning) does not decline.

- While such rules-based approaches can help mitigate procyclicality, more discretionary approaches can also be adopted. In the past, several economies undertook discretionary tightening of financial regulations during boom periods while relaxing these policies somewhat during the contraction phase. Efforts to reduce the procylicality of financial systems will need to address issues of "rules versus discretion" and the particular instruments that can best contribute to reducing procyclicality.

Reinforcing International Cooperation in Regulation:

- Asian economies should strengthen the existing ASEAN+3 framework by sharing more information, harmonizing prudential indicators, increasing coordination on conducting early warning system analysis, and discussing more openly national and regional policy interventions. To help monitor potential financial vulnerabilities and develop a plan of action in response to the immediate challenges of a financial crisis —also by engaging with the private sector— an "Asian Financial Stability Dialogue" among ministries of finance, central banks, as well as market regulators and supervisors can be created. Such dialogue would be important to promote longer-term financial market development and establish standards for governance and transparency and improve, in turn, investors' confidence.

- Also, greater attention needs to be paid to ensuring consistency in regulation across national markets and

improving the coordination and cooperation across financial market regulators. In outlining these objectives, the G20 has opened the door to a review both of the structure of financial regulation within countries as well as the scope for improvements in coordination between national regulators. One important issue concerns the merits of adopting the new integrated regulator model (of either the single or twin peak structure) in which all financial regulators are effectively under a single roof. Another issue concerns the scope for avoiding regulatory gaps in systems in which regulation will continue to be divided along functional or institutional lines. Especially in the case of mature financial systems in which the lines between different institutions and activities are becoming blurred, there are significant challenges ensuring that all institutions and activities are appropriately supervised and that no gaps emerge.

Accelerating Reforms to Strengthen Financial Systems:

- The region must continue to reform its financial systems to enhance resilience. Although the crisis continues to unfold, the region's policy makers should take this opportunity to formulate a longer-term reform agenda and step up efforts to reshape financial systems. While significant progress has been made since the 1997/98 crisis, more work can be done to strengthen financial systems, to reduce vulnerabilities, and to enhance market efficiency. New initiatives could include deeper and more substantial reforms in areas of prudential regulation and supervision, transparency and information disclosure, risk management practices in the financial sector, and corporate governance.

Broadening and Deepening Financial Markets to Enhance Resilience:

- Broadening and deepening financial markets—in particular local currency bond markets—remain an important long-term goal for more efficient and resilient domestic financial systems. The development of liquid and well-functioning local currency bond markets offers an alternative financing source to bank loans, provides long-term domestic currency funding for investment, and helps foster regional financial stability. A broad range of reforms are required to develop well-integrated and functioning Asian bond markets, such

as (i) improving the legal and regulatory frameworks to ensure transparency and investor protection (ii) removing impediments to market entry and investment, particularly those on capital and exchange controls; (iii) broadening and diversifying the investor base; (iv) strengthening capacity of regulators; and (v) improving related infrastructure, such as clearing and settlement, credit guarantee and data collection. For example, at the regional level, the new medium-term roadmap under the Asia Bond Markets Initiative aims to address many of these issues.

Appendix

Chronology of a Crisis

Date	Event
22 Jun 07	Bear Stearns halts redemptions for investors in High-Grade Structured Credit Strategies Enhanced Leverage Fund and High-Grade Structured Credit Fund.
August 07	Discovery of subprime mortgage backed securities in portfolios of banks and hedge funds around the globe sparks worldwide credit crunch.
August 07	US Federal Reserve injects about $100 billion into money supply for banks to borrow at low rates.
10 Aug 07	For the first time since 11 September 2001, central banks coordinate efforts to increase liquidity. US Federal Reserve injects $43 billion; European Central Bank $214.6 billion, and the Bank of Japan $8.4 billion ($ equivalents). Australian, Canadian central banks also intervene.
13 Sept 07	Britain's Northern Rock applies to Bank of England for emergency funds.
03 Mar 08	HSBC reports $17.2 billion subprime-related loss.
18 Mar 08	Lehman Brothers and Goldman Sachs report sub-prime-related losses.
13 Mar 08	Investment firm Carlyle Capital defaults on debts.
17 Mar 08	JPMorgan Chase buys investment bank Bear Stearns for $2 per share.
18 Mar 08	US Fed makes funds available to banks and other institutions and cuts the federal funds rate 75 basis points to 2.25%. It also increases the size of its dollar swap lines together with the ECB and Swiss National Bank.
April–May 08	UBS, Deutsche Bank, Merrill Lynch, Citigroup, Royal Bank of Scotland, MBIA, Blackstone, HSBC and Barclays report more sub-prime-related losses and write-downs.
07 Sept 08	US government seizes mortgage lenders Fannie Mae and Freddie Mac, which account for half of outstanding mortgages.
15 Sept 08	Investment bank Lehman Brothers declares bankruptcy.
15 Sept 08	Bank of America takes over Merrill Lynch for $50 billion

Date	Event
15 Sept 08	Standard and Poor's downgrades Britain's biggest mortgage lender, HBOS, causing its shares to plunge in a multi-session decline.
17 Sept 08	US government bails out AIG for $85 billion.
18 Sept 08	Lloyds TSB takes over HBOS in a £12 billion deal.
21 Sept 08	US Fed approves Morgan Stanley and Goldman Sachs application to become bank holding companies, ending their investment bank status.
26 Sept 08	Federal Deposit Insurance seizes Washington Mutual, the biggest US savings and loan, and sells its banking assets to JP Morgan for $1.9 billion.
29 Sept 08	Iceland's government takes over Glitnir, its third largest bank.
29 Sept 08	Citigroup buys Wachovia, the fourth largest US bank, in a rescue deal backed by US authorities.
29 Sept 08	US House of Representatives votes down $700 billion bail-out plan.
30 Sept 08	Belgian, French and Luxembourg governments provide €6.4 billion to keep Dexia, the Belgian-French municipal lender afloat.
01 Oct 08	US Senate passes revised bail-out bill, followed two days later by the House of Representatives. President George Bush signs the "TARP" (Troubled Asset Relief Program) into law.
08 Oct 08	The Bank of England, US Fed, ECB, Bank of Canada, Swiss National Bank and Sweden's Riksbank cut key interest rates by a half point.
14 Oct 08	Japan injects 2 trillion yen into money markets.
09 Oct 08	OMX Nordic Exchange Iceland temporarily suspends trading, citing "unusual market conditions". Russia's MICEX Index also suspends trading through 10 October after 14% plunge.
11 Oct 08	Central bankers and leaders from the G7 agree to urgent, coordinated action to address the crisis.
13 Oct 08	EU economies unveil bailout packages totaling over $2 trillion dollars.
17 Oct 08	Asian stocks rise as governments step up efforts to counter the global credit-market crisis in the form of bank guarantees.
17 Oct 08	Bank of Korea says it will trade directly with banks in the swap market to boost foreign currency liquidity.
19 Oct 08	The Netherlands bails out ING with a €10 billion rescue plan.
20 Oct 08	Belgium rescues Ethias, an insurance company, with a €1.5 billion capital injection.
21 Oct 08	Germany's Bayern LB applies for funds from the German rescue program.
24 Oct 08	EU and Asian states hold pre-Washington Summit in Beijing to discuss coordinated efforts to contain the financial crisis.
26 Oct 08	IMF offers lines of credit, including $16.5 billion to Ukraine and $25 billion to Hungary.
01 Nov 08	Japan unveils fiscal stimulus of $51 billion, Korea of $11 billion.
09 Nov 08	Norway agrees to lend Iceland €500 million.
09 Nov 08	PRC announces stimulus package that could amount to RMB4 trillion ($586 billion) to rebuild market confidence and unleash domestic demand.
10 Nov 08	AIG rescue package amended and increased to $150 billion.
10 Nov 08	Fitch downgrades Bulgaria, Hungary, Kazakhstan, and Romania and revises the long-term foreign currency ratings of Korea, Mexico, Russia, and South Africa from stable to negative.
12 Nov 08	German government and Bundesbank extend €50 billion lifeline to Hypo Real Estate, the second largest commercial property lender. (A smaller deal reached in September was withdrawn in October.)
15 Nov 08	G20 developed and emerging nations, in Washington, agree to enhance cooperation to revive economic growth and move quickly on financial reforms.

Date	Event
15 Nov 08	IMF approves $7.6 billion bailout to help Pakistan prevent default on its debt.
15 Nov 08	Eurozone officially slips into recession after EU figures show 0.2% Q3 contraction.
20 Nov 08	IMF approves a $2.1 billion loan for Iceland, after its banking system collapsed, the first IMF loan for a Western European nation since 1976.
24 Nov 08	US agrees to back $306 billion of troubled Citigroup assets and says Treasury to inject $20 billion liquidity into the banking giant.
25 Nov 08	US Fed commits another $800 billion to revive lending: says it will buy as much as $600 billion of debt issued or backed by government-chartered housing finance companies and will set up a $200 billion program to support consumer and small-business loans.
26 Nov 08	European Commission unveils €200 billion plan to stimulate spending and boost consumer confidence.
26 Nov 08	People's Bank of China cuts lending and deposit rates 108 basis points.
3 Dec 08	Bank of Korea says it will supply liquidity to the markets by paying interest on banks required reserves (in a one-time payment of 500 billion won [about $340 million]). Adds Korea Housing Finance Corp. to the list of bonds it will purchase.
4 Dec 08	ECB lowers policy rate 75 basis points to 2.50%—its biggest cut ever—while the Danish, Swedish, and UK central banks also cut rates.